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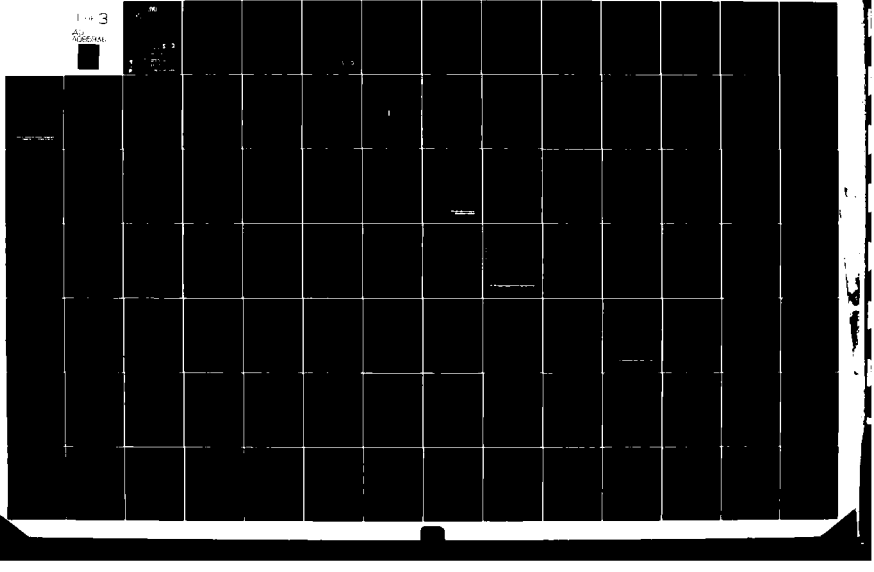

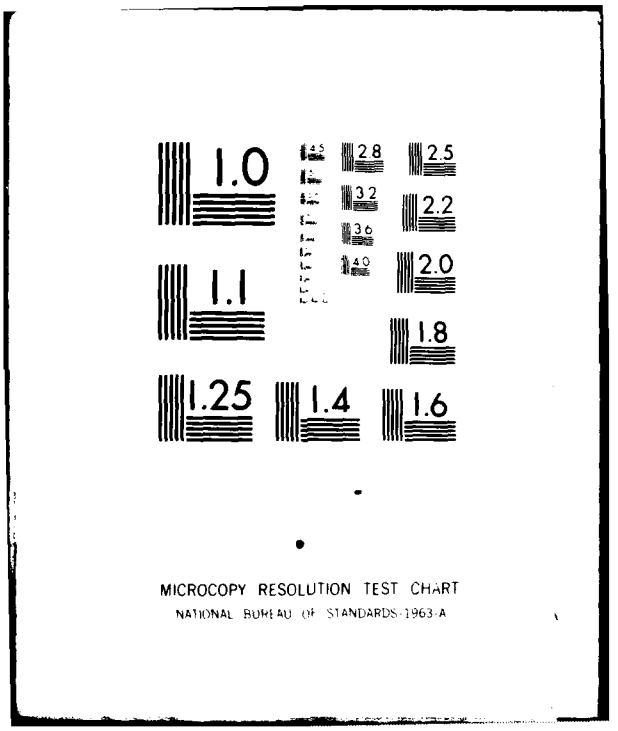
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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER	2. GOVT ACCESSION NO. 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Design of an Information Management Program for Headquarters, Department of the Army, Phase 2 Detailed Report	5. TYPE OF REPORT & PERIOD COVERED Contractual Study, Aug 1979 through Feb 1980
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Arthur Young & Company	8. CONTRACT OR GRANT NUMBER(s) MDA 903 78-C-0483
9. PERFORMING ORGANIZATION NAME AND ADDRESS Arthur Young & Company 1025 Connecticut Avenue, NW Washington, DC 20036	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS OMA-9
11. CONTROLLING OFFICE NAME AND ADDRESS HQDA, Assistant Chief of Staff for Automation and Communications, DAAC-ZA Washington, DC 20310	12. REPORT DATE February 26, 1980
	13. NUMBER OF PAGES 204
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

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DISTRIBUTION STATEMENT A
Approved for public release;
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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

Final rept. 1 Aug 79-29 Feb 80.

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Information, Automated Information, Information Resource, Information Resource Management (IRM), Benefit, Resource, Information Policy, Functional Program, Information Resource Information System (IRIS), Information Resource Directory Organizational Design, IRM Organization

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The basic question addressed in Phase 2 of the study is the development of policies, detailed procedures, a proposed organizational design, and a micro-level implementation milestone plan for implementation of the distributed IRM program for management of automated information at Headquarters, Department of the Army (HQDA). The study develops nine policy concepts for information management. The functions of the eleven IRM functional programs are completely developed. A methodology for costing information is developed.

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An information system for internal management of IRM, the Information Resource Information System is fully specified. Organizational design to include designation of required personnel resources by type are included for each distributed organizational element. IRM program cost estimates are also included. The study recommends that the IRM Resource Management Office which manages the overall programs be established at the highest levels of HQDA in Office, Chief of Staff directly reporting to Director of the Army Staff. Ten of the eleven IRM functions are distributed to three major Army staff elements.

ARTHUR YOUNG & COMPANY

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February 26, 1980

Mr. Harold E. Gelfond, Chairman
Study Advisory Group
U.S. Department of the Army
Room BD 1033, The Pentagon
Washington, D.C. 20310

Dear Mr. Gelfond:

We are pleased to submit this Phase II Final Report which is a result of the study which we conducted during the period of August 1, 1979 to February 26, 1980. Our report is entitled The Design of an Information Management Program for Headquarters, Department of the Army. It contains our program design and our recommendations for establishing a program to manage the automated information resources of HQDA.

We wish to express our appreciation to the Department of the Army for the support and assistance which you and the members of the Study Advisory Group have provided during this phase of our effort. If you or any other interested parties have any questions regarding this draft report, we would be more than willing to provide the necessary explanations.

Very truly yours,

ARTHUR YOUNG & COMPANY

By: Cornelius Tierney

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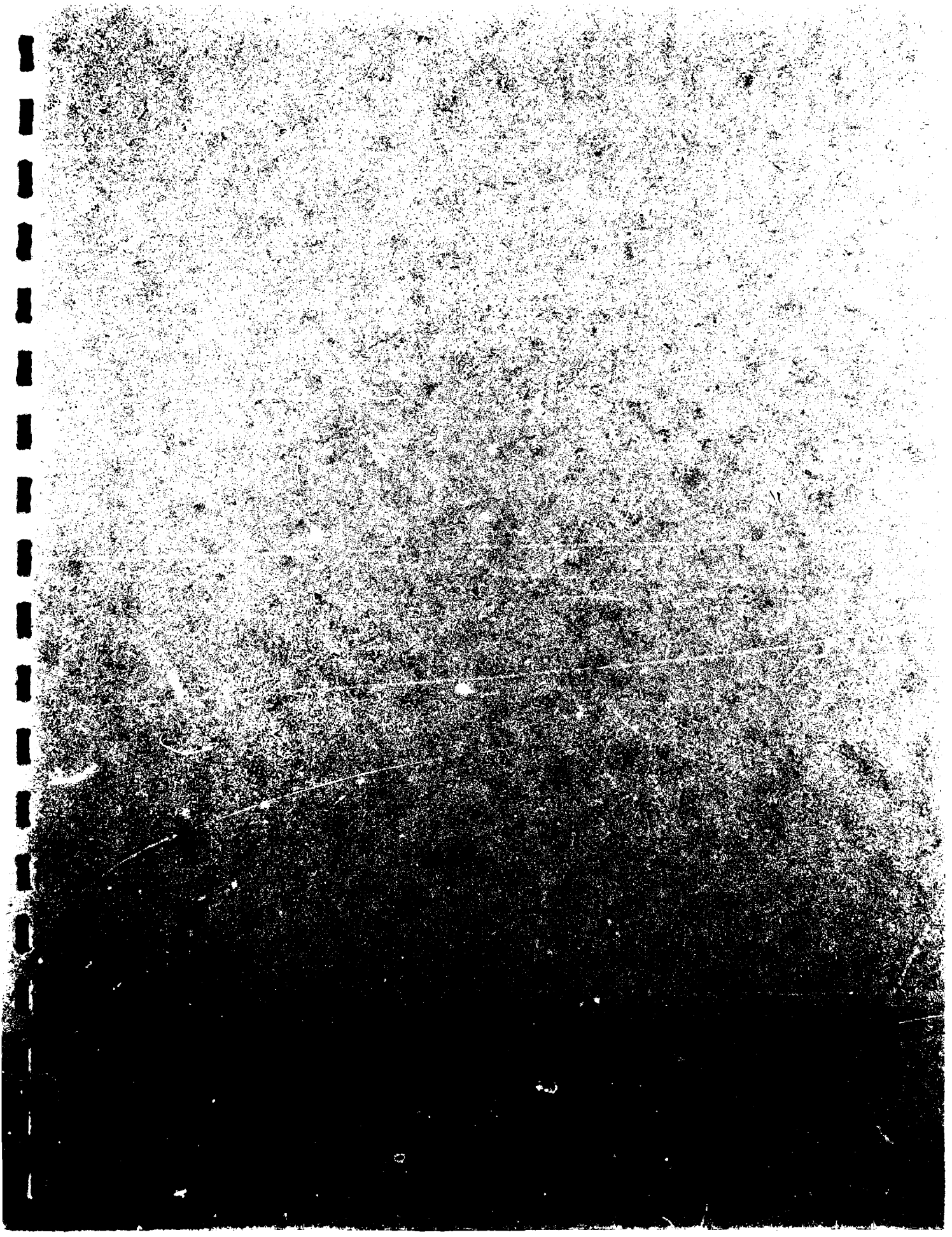


I. THE NEED FOR INFORMATION RESOURCE MANAGEMENT AT HEADQUARTERS, DEPARTMENT OF THE ARMY

There is an ever increasing need for better information in the Army, and especially at Headquarters, Department of the Army (HQDA). Under the current automated information systems environment, the reporting of information to HQDA top levels has been somewhat fragmented, requiring at times extensive manual conversion and translation efforts. HQDA management must have the capability to bring together related data and information from different functional organizations in order to have a comprehensive understanding of Army activities. However, due to the size and complexity of DA operations, and the management structure, these capabilities are not currently as effective as they should be. HQDA needs to have the best information available for decision-making, and to accomplish this objective, it must establish an effective program for data and information management.

This introductory chapter reacquaints the reader with this study on information management and presents the information management problems identified by Arthur Young & Company's Phase I and Phase II study for Headquarters, Department of the Army. The discussions are presented in the following sections:

- Study Objectives and Scope
- Study Methodology Overview
- Summary of HQDA Information Concerns and Problems
- Information Resource Management
- Benefits of Managing Information as a Resource.

1. STUDY OBJECTIVES AND SCOPE

As we will identify in this report, HQDA's current information management issues concern the proliferation of management information systems, the lack of system integration, the use of different management languages, and the autonomy of HQDA functions. Each of these has been a contributing factor to the less than effective management of information at HQDA. The implications of these issues and related factors must be considered from both a technical and organizational standpoint. Through such considerations, an information management function can be established which will eventually lead to improved data and information utilization and better information quality at HQDA.

The goal of this study has been to develop the concepts, directions, policy areas, an organizational approach, and an implementation plan for use by Headquarters, Department of the Army in accomplishing the management of automated information within HQDA and its supporting Data Processing Installations (DPIs). The overall objectives of this study were:

- Determination of the requirements for effective automated information management among the HQDA organizational elements
- Development of an information management program that can be used to effectively manage the Army's automated information resources
- Development of an information administration structure and the necessary policies and procedures required to administer the information resource management program
- Development of a time-phased plan for implementing the information resource management program.

The study was divided into two phases: Phase I - Program Requirements Definition, and Phase II - Program Implementation Planning. In Phase I we concentrated on determining the requirements for information management and developed the conceptual framework for a program for managing the automated information resources of Headquarters, DA. In Phase II we developed the program in greater detail to include a long-range approach for implementation. This Phase II Final Report provides further definition of our conceptual approach to managing the automated information resource and presents our recommendations concerning the development in HQDA of a consolidated program for information management. This study is one of the essential elements of such a program, which when implemented in HQDA should lead to improved management reporting, more effective decision making, greater productivity among Action Officers, and more cost-effective information and information-based activities.

In order to understand the impact and direction of the recommendations developed in this report, it is important to clearly recognize certain aspects of the study:

- The goal of the study was the development of a conceptual approach to information management for automated information at HQDA, not the design of a specific system
- The reviews of current HQDA operations were conducted to allow Arthur Young & Company to determine what is needed and what is feasible for managing HQDA's information resource, not to evaluate any individual system or activity

- The study was restricted to automated information at HQDA, and our recommendations are offered in that light (i.e., they do not include manual information and are not Army-wide)

- The policy areas presented represent areas where specific policies and procedures can be further developed by HQDA

- The organizational placement of responsiblity for certain aspects of information management were carefully selected to provide an effective and acceptable initial program

- The staffing and resource requirements are initial estimates and may be expected to change as the program matures.

The scope of this study, and consequently the information resource management program which we recommend, has been limited to the automated information used by Headquarters, Department of the Army to manage and plan the resources of the Army. Extension of the concepts of information resource management to include manual information or data employed outside the HQDA have been considered in the conceptual design of the program, but verification of such extensions will require additional, specific study. We consider this restriction to be reasonable given the contractual constraints on time and resources for conducting the study. In addition, we were also specifically excluded from studying:

- Compartmented intelligence information

- Field operations in the MACOMS

- Relevant operations in OSD and in the Army Secretariat.

The reader is cautioned to keep this restriction in mind while reviewing the remainder of this Phase II report. The evaluation of HQDA status in Phase I and the development of an information resource mangement program in Phase II are presented and meant to be interpreted under the terms of this restriction of scope.

2. STUDY METHODOLOGY OVERVIEW

The development of an effective information management program for HQDA requires a sound understanding of the current information management environment. In order to understand this environment, we employed a structured sampling approach to gathering information. This approach entailed an overview of the relevant information management activities in HQDA, with a more detailed review of selected organizations, automated systems, and management practices with regard to information management. Using this approach, we acquired the information necessary for our analysis.

In Phase I, our initial focus was directed toward gaining a greater understanding of efforts in HQDA to manage information. A review of

current HQDA-wide information management activities was performed to determine current information management responsibilities, approaches, and problems. We reviewed existing policy and procedure guidance (both internal and external) with regard to information management, determined the roles of the different HQDA organizations currently involved in some aspect of information management, and assessed the status of current information management activities within HQDA. Input was provided through a series of interviews with General Officers, Action Officers, Technical Staff, Directors of Automation, and Data Standardization Managers primarily from the thirteen Data Processing Installations and the organizations of ACSAC, TAG, and USACSC.

We also conducted three case studies in Phase I to determine, through evaluation of specific events, the actual impact of information management problems in the Army. The cases chosen involved requests for information concerning manpower, readiness, and materiel data, respectively. The case studies focused on how requests for information resulted in problems in generating a response, how a coordinated information management program might have had a direct impact on answering these inquiries, and what costs were involved in satisfying the information request. The selection of individual case studies was based upon the currency of the request to ensure the ability to trace the flow of information and problems involved, and the requirement of retrieving the data from two or more functional areas. All of these above efforts provided the background for our Phase I data collection approach. The findings of Phase I are summarized in the next section of this chapter.

Phase II of this study began after the HQDA Study Advisory Group (SAG) accepted our recommendation for the distributed approach to information management from the set of feasible alternatives presented in the Phase I Final Report. The Phase II activity concentrated on the design and development of the policy concepts and organizational structure that are necessary to implement the distributed approach. Three specific tasks were performed in Phase II:

- Design of the functional program to create the managerial environment necessary to insure Information Resource Management (IRM) program effectiveness
- Design of the organizational structure required to implement the information management capability, identifying the location of appropriate responsibilities in the HQDA organization, and detailing man years of effort required for program implementation.
- Development of a time-phased implementation schedule including major milestones and tasks to be accomplished.

The functional program design concentrated on the development of information resource management policy concepts that create the operational setting and produce guidelines aimed towards efficient

IRM operations at all HQDA organizational levels. Once the information resource management policy areas were defined, an organization structure was developed and assignments of responsibility for the ongoing operational program were then structured. The definition of the program composition, including new organizational entities, changes to existing organizational entities, the functions to be performed, and resource requirements of the information resource management program were also defined. The associated organizational authorities and responsibilities and the organizational placement and functional relationships of the new program with those of existing functional staff organizations were also developed and defined. The final task of Phase II was the development of a time-phased implementation plan for instituting information resource management in HQDA.

3. SUMMARY OF HQDA INFORMATION CONCERNS AND PROBLEMS

In this section we provide a summary of the concerns and problems related to HQDA-wide information management that we found as a result of our data collection process of Phase I. In coordination with the interviews that were conducted, we also conducted three specific case studies and analyzed a sample of fourteen HQDA automated systems. Exhibit I-1 presents the problem areas and impacts identified at HQDA which are discussed below. Greater detail may be obtained from our Phase I report.

(1) Inaccurate, Inconsistent, and Untimely Information

The information which HQDA uses to manage its present resources and to plan for the years ahead, may, at times, be inaccurate, inconsistent, or not timely. The impact can be measured in terms of cost associated with correcting the data and actual cuts in appropriations for certain programs because sufficient, consistent information could not be produced. In the area of managing the operations of the Army the impact of incorrect information can be more severe as it can lead to misinformed decisions in strategic and tactical situations.

When various Staff elements report information which conflicts with each other, substantial efforts must be made in order to reconcile or explain the variances. This can result in reduced quality of information for operational decision making, resource management, and reports to OSD and Congress. These conflicts not only force the integrity of the data to be questioned but cause much manual manipulation and effort in creating crosswalks which might be spent more productively. Lacking a coordinated effort to manage information, the vertical focus of current management information systems could continue to inhibit data sharing and force the expenditure of efforts to reconcile conflicting information.

Problems and Impacts of Current Approach To Information Management at HQDA

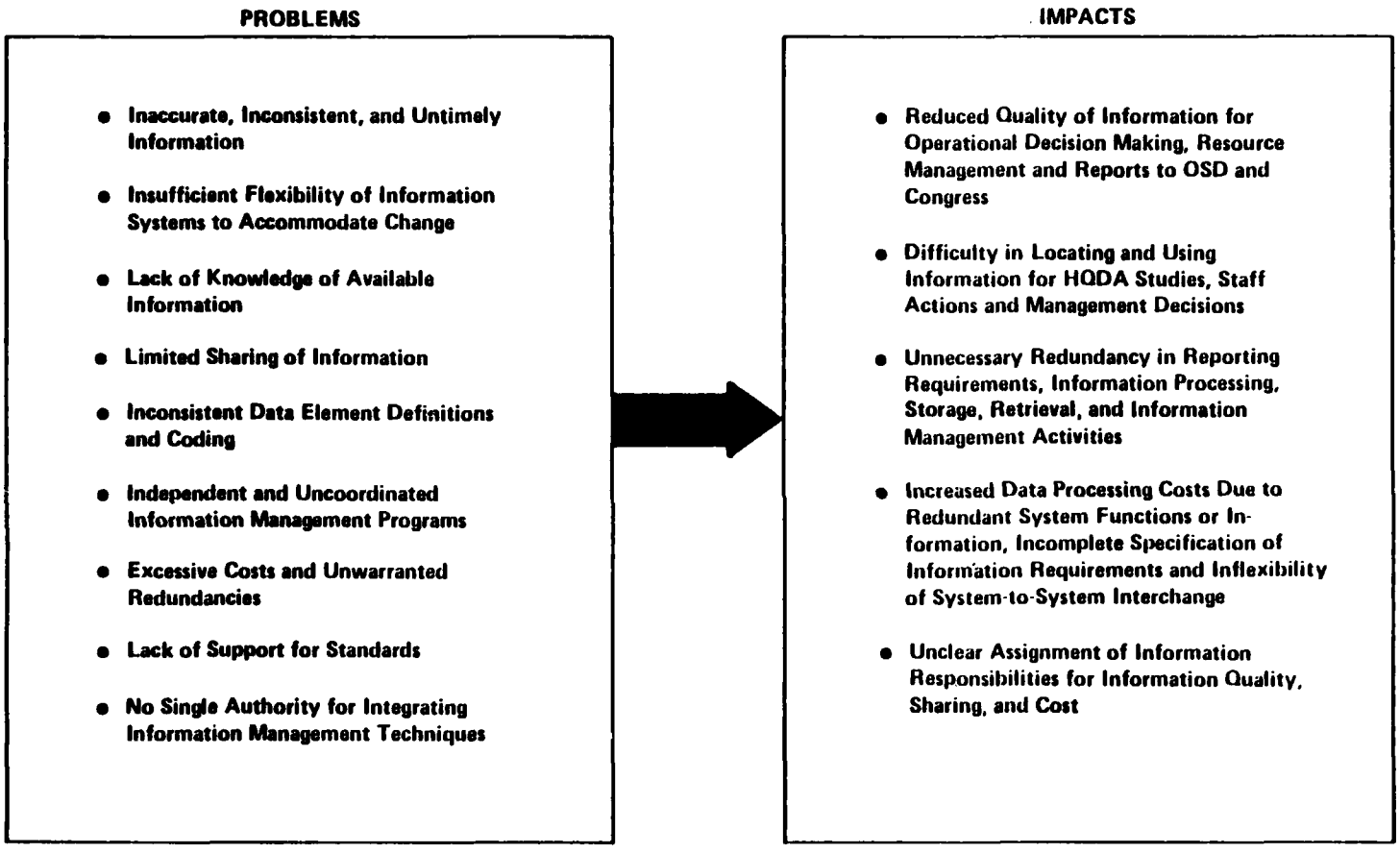


EXHIBIT I-1

(2) Insufficient Flexibility of Information Systems to Accommodate Change

HQDA, at times, needs to rapidly evaluate the impact of potential events such as budget cuts or new manpower ceilings in order to provide informed comment or to plan for future needs. Current HQDA information systems generally do not provide adequate flexibility to permit this type of "what if" evaluation. In situations where this exercise has been significant, there has been a tendency to design a new information system just to support the "what if" situation. Unfortunately, the dynamics of the HQDA environment are such that the questions in the future are never quite the same, and so the new information systems are not quite sufficient. The results are either changes to the existing system or the development of yet another system. HQDA needs to develop effective information plans in order to assess the need for new systems.

(3) Lack of Knowledge of Available Information

There is insufficient knowledge of what information is available, where to find it, how to access it, and what it means. HQDA has not developed a completely centralized information locator facility which can assist action officers in obtaining the information they need to compile their action reports. Each individual Staff Agency relies primarily on a manual system of an informal action officer network to serve as the interface to the agency's information resource as well as to the information of other agencies.

The problem is not limited to inter-Agency staff actions. Within a given agency, there may be insufficient awareness of the agency's information resources as well. Typically, information is managed within an agency on a system-by-system basis and not as a resource unto itself. Thus, the knowledge of what information is contained in which system can pose problems within Staff Agencies as well as among them. This has caused difficulty in locating and using information for HQDA studies, staff actions, and management decisions.

This broad finding carries through to several levels. We found that there was a general lack of knowledge of what data elements exist among HQDA data bases and a lack of knowledge as to where specific elements reside, the format in which they are stored, and the process required to access the information. The impact on the Army has been duplicate information collection and maintenance of files containing similar information among the different functional areas. This inhibition of data sharing extends not only to information held at DPIs but also to data needed in support of applications systems at HQDA. Data may be

held and maintained independently because the user is unaware that it is being collected and stored by another source that is closer to the origin of the information. As the number of efforts made to gather similar data increase, the ability to assure the quality and timeliness of the information declines. The impact of these findings on HQDA center around the need for education and tools that develop an awareness of the location, availability, and utility of HQDA's information resource.

(4) Limited Sharing of Information

There is currently limited sharing of information among the functional staff agencies and their supporting data processing installations (DPIs). This situation is due in large part to the vertical "stovepipe" systems environment of most staff agencies where data and information are collected at the bottom of the organizations, processed within the respective DPIs, and funneled upwards to fulfill the information needs of the General Officers and Staff at the top. (See Exhibit I-2). Generally, there is limited coordination across the stovepipes of the definition, representation, processing, or storage of data to facilitate that use. The end results can be inconsistencies in the data reported to higher authorities from two different channels, difficulty in correlating information at the top levels of HQDA because the data is aggregated or represented differently, and unnecessary redundancies of information collected, processed, reported, and stored across and within functional areas.

(5) Inconsistent Data Element Definition and Coding

During our examination of applications systems, examples of inconsistent data element definitions and coding were found. Some data elements had the same names but were identified differently, and conversely, there were instances where identical information was being called by different names. This can cause a problem when the systems attempt to use the same data in performing similar functions. Through properly defined data management policies and procedures, data element manipulation and usage can be controlled, thereby insuring that each staff element in HQDA uses the data consistently and information generated using the same base data elements can be compared meaningfully.

(6) Independent and Uncoordinated Information Management Programs

A fragmented approach to information management has developed at HQDA over time. The activities pertaining to HQDA-wide information management are performed by a number of staff agencies, no single organization has been assigned overall management responsibility for information management. It was expressed in the staff interviews that there is a sense of a lack of direction from HQDA in the information management area. While

HQDA Information System Environment
(Stovepipe Approach)

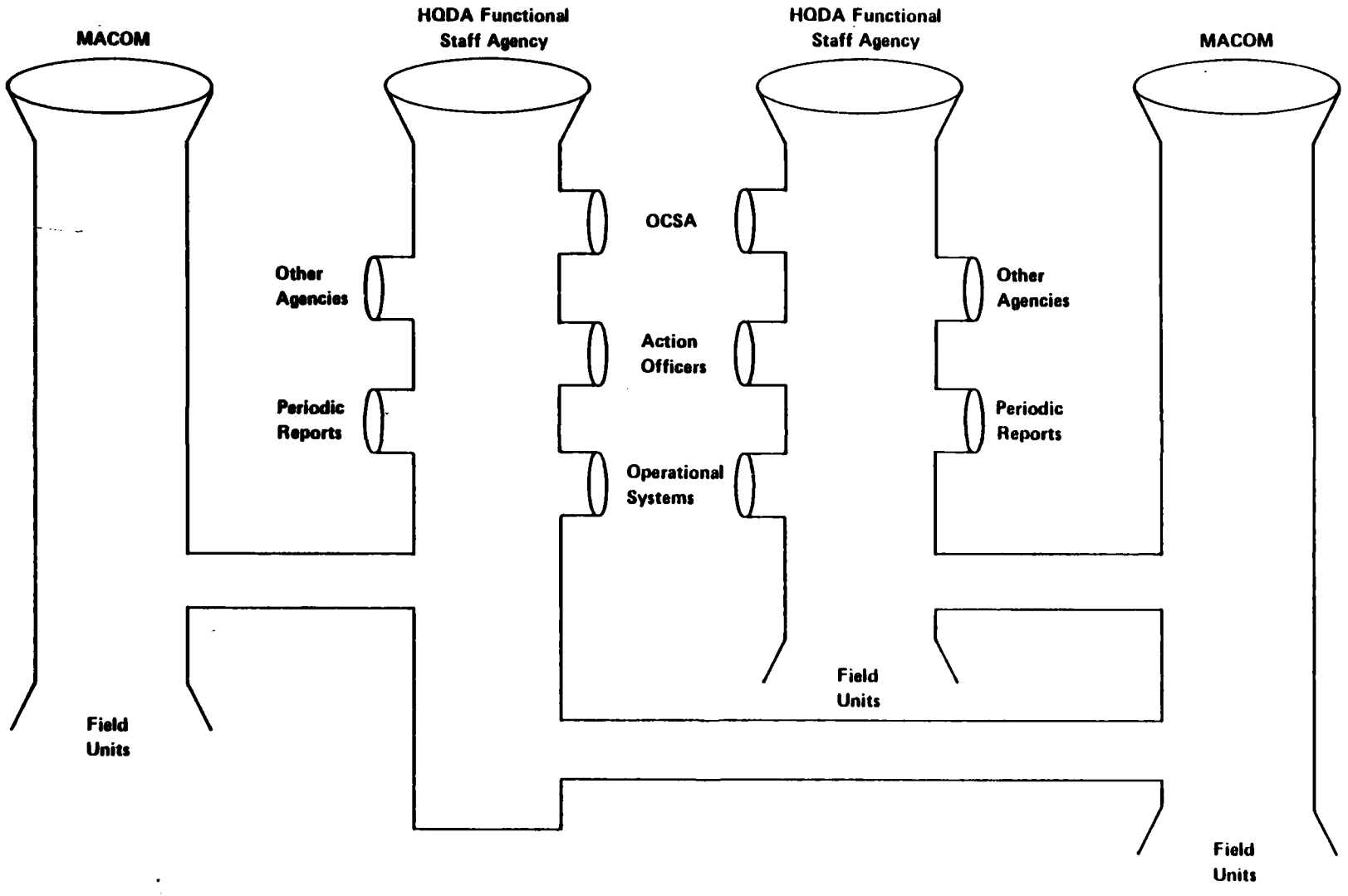


EXHIBIT I-2

several policies exist, each staff agency and DPI approached some of their information management problems more or less independently because of a lack of coordinated policy or guidance. There is not a central information management authority to review system designs or to provide technical guidance and support of information management. Primary emphasis at the HQDA level has been placed on hardware and software requirements and not on information content within systems.

As mentioned, several DPIs are proceeding to develop their own information management program independently. While the DPIs are realizing the need for an improved management of their information, the uncoordinated development of information management can result in conflicting policies. There are overlapping information management activities being performed, and as a result there is unncessary redundancy in reporting requirements levied on the field and duplication of information processed, stored, and retrieved.

(7) Excessive Costs and Unwarranted Redundancies

There are redundancies in information collection, processing, reporting, and retention fostered by the stovepipe environment. Not all redundancies are necessarily inappropriate, however, since certain redundancies may be needed for back-up, comparison, or fulfillment of mission response requirements. However, such redundancies can present problems relating to inconsistencies among data bases maintained by the individual Staff Agencies, the need to update multiple copies of data which may be widely dispersed (or even unknown) throughout HQDA, and confusion over which copy or version of the information is "official".

Unnecessarily redundant collection, processing, reporting, and retention of information can also entail significant costs in terms of manhours spent in filling out similar forms, excessive computer power being required to handle information which is being similarly processed at other installations, General Officer and staff time spent in pouring over massive reports to obtain one or two pieces of pertinent information, and expensive storage facilities to retain copies of data that are maintained (and perhaps more up to date) elsewhere in HQDA.

Currently, information requirements are not planned from the top down. As a result, there are unnecessary redundancies in reporting requirements. There exists conflicting requirements, and information is not reported fast enough to the decision-makers that need it. As a result, CSA has expressed the need for top-down planning and coordination of information requirements.

(8) Lack of Support For Standards

Army-wide policies regarding data standards are not followed uniformly nor are they properly supported. While some systems were developed in compliance with the Army Information Processing Standards, no DPI has been using the standards in all systems which the regulations are intended to include. Standardization has not been considered an integral part of information systems planning. An insufficient amount of effort is being directed at this program by HQDA. The DPIs are not taking an active role in having data elements submitted for standardization. Further, the current policies contain little provision for compliance auditing and enforcement. The key objective of data standardization is to promote compatibility among systems. The lack of adherence to the standardization policy has resulted in systems being developed using non-standard data elements which has led to inefficient and costly manual crosswalks to accomplish data sharing among systems.

(9) No Single Authority Exists with the Responsibility for Integrating Information Management Techniques into Systems Design and Review

An information management authority does not exist to review system designs horizontally for information compatability or to provide technical guidance and support for information management. As a result, there are unclear assignments of the information responsibilities with regard to quality of information, sharing of information, and the cost of information. The increased data processing costs are due, in part, to redundant system functions or information, incomplete specification of information requirements, and the inflexibility of system-to-system interchange. The dynamic nature of the HQDA environment has also caused increased demands for data and will require a greater emphasis on a horizontal review and coordination of information systems planning. The increased data processing costs are due, in part, to redundant system functions or information, incomplete specification of information requirements, and the inflexibility of system-to-system interchange.

The impacts of these concerns are widespread across HQDA. The problems with information impact the fundamental nature of HQDA and its ability to meet its mission. As our 5-ton truck case study pointed out, HQDA's presentation of inconsistent or inaccurate data to Congress can result in embarrassement for the Army, considerable additional work compiling new data, or even a reduction of resource allocations. Similarly, the results of MOBEX 78 indicated that incompatibilities among the information collected and maintained by the various Staff Agencies can lead to a possible adverse impact on the Army's readiness to engage in military actions. Our case study of a mobilization inquiry

from Congressman Beard demonstrated the substantial degree of resources and time required to respond to such inquiries, due in part to a lack of organization of the information resources of HQDA and the effort required to locate pertinent information. Further, the Readiness Indicator Model (RIM) case study showed that a lack of agreement on standard terminology causes problems in conducting broad studies and developing models of this type.

Individually, these findings and impacts present a challenge to HQDA as it plans for its budget resources and monitors the progress of Army programs. Collectively, however, the problems of information at HQDA indicate an area where costs are escalating while results, in the form of more effective information, are widely questioned. The top-level concern for addressing the information problems of HQDA across all agencies has been expressed through numerous means, most recently in the Chief of Staff's request for the creation of a consistent data base of the most important HQDA information. The significant difficulties which will be encountered in establishing and maintaining this data base (as have also been encountered in the long-standing PROBE effort of PAED) will not be technical problems of data base design or access but rather information management issues of inconsistent definitions, incompatible representations, and unclear responsibilities for the information to be supplied to support those efforts. The independent development of yet another data base will only serve to identify, but not to solve, the information management problems of HQDA.

These HQDA information concerns and problems were identified and discussed in Phase I of our study. The Phase I report described the concept of a program for information management, analyzed alternative approaches to implementing the program, and presented our recommended approach to manage information at HQDA. In the next section we summarize the concept of information resource management.

4. INFORMATION RESOURCE MANAGEMENT (IRM)

The status of information management at HQDA can be observed in a variety of situations which are familiar to the Army staff. For example:

- Army testimony, at times, has been questioned by Congress because of conflicting data, frequent revisions, and substantial delays in responding to Congressional inquiries
- Data reported to OSD and OMB in conjunction with the annual budget preparation process has contained significant omissions resulting in operational program imbalance because of confusing and inconsistent internal reporting practices
- Operational exercises have indicated significant shortfalls of supplies, equipment, and personnel due, in part, to conflicting and uncoordinated information reported to or by the respective HQDA Staff Agencies.

These, and similar instances are symptomatic of the current problems in managing information at HQDA.

The cost of information and related information processing systems is also rising dramatically while the cost/performance ratio of ADP equipment continues on a favorable downward trend. Typically, information is viewed at HQDA as a "free good," while little attention is focused on the cost associated with fulfilling an information request. Information costs are not adequately identified nor sufficiently aggregated in the Army accounting system to be useful as a management tool in controlling information related activities. Reporting redundant information to more than one requesting agency, reconciling conflicting data, and redesigning and reprogramming HQDA information systems which were not quite flexible enough to accommodate changes in management information requirements are all indicative of the information problems encountered at HQDA.

HQDA has been attempting to cope with the problems of managing information through a variety of policies and organizational structures. Numerous organizations have been established in HQDA to focus on the management of related aspects of information such as the medium used to store it, the equipment used to handle it, or the system constructed to process it. HQDA has also attempted management approaches which focused on the particular use intended for the information (such as addressing management information independent of operational information) or which concentrated on information related to a single specific subject or functional area (such as financial or personnel information). The one result of these narrow, uncoordinated management views has been identified as a "stovepipe" systems approach which, at times, produces inconsistent and conflicting results.

The management of information as a resource focuses on the management of information regardless of its storage medium, irrespective of the equipment which handles it, and horizontally across systems, uses, and subject areas. Information resource management addresses the establishment of coordinated representations, common definitions, and user responsibilities to the individual benefit of the respective Staff Agencies as well as to the mutual benefit of HQDA as a whole. This information focus, up to now, has been missing from HQDA's uncoordinated attempts to manage information-related activities. Previously, information management has been a side issue, performed in conjunction with other programs with more pressing primary objectives (such as automation management).

Information Resource Management (IRM) is a new way of doing business in HQDA which would recognize the vital and costly nature of information to the entire organization. IRM incorporates a managerial process for identifying responsibilities for information sharing and quality, establishing accountability for information costs, focusing attention on information-based problems and their HQDA-wide resolution, planning information requirements, and coordinating the development of procedures, systems, or computer programs for satisfying those requirements in a cost-effective manner.

Information Resource Management, in this interpretation, is the management of information as a resource itself and not just the management of the resources involved in handling or producing information, as is the current Army focus. The management of the information resource, naturally, will entail interaction and cooperation with the management of the information handling resources, but information resource management addresses a unique set of problems and provides an organization-wide perspective of the information resource regardless of the storage media of the data or the system of its application.

5. BENEFITS OF MANAGING INFORMATION AS A RESOURCE

Managing information as a resource will accrue benefits both for HQDA as a whole as well as for the individual Staff Agencies. Some of these benefits may be realized in the near-term as decision aids are constructed and information improvements are put into effect. Many of the beneifts, however, will be of a longer-term nature as the life cycle costs of information and information systems development are reduced. The total impact of following the IRM approach must be considered in assessing the desirability of establishing an IRM program for HQDA. Some of the expected benefits of information resource management are summarized in Exhibit I-3 and are discussed below.

(1) IRM will benefit HQDA top management by facilitating the process of maintaining consistent information for more effective operational decision-making, improved planning and resource management, increased responsiveness to requests for information, and more effective reports to OSD and Congress.

The management of information as a resource focuses on the establishment and use of policies, procedures, tools, and responsibilities designed to coordinate the production of information across various Staff Agencies and information systems. This coordination addresses the assignment of responsibilities for the content and quality of information as well as its availability and timeliness. As a result, the Army Staff will be able to achieve more effective operational decision-making. Critical HQDA decisions typically require the integration of information from several sources or information systems. Managing information as a resource will facilitate this integration by coordinating the information handling process in advance, rather than after the request is received.

The HQDA top management activities of planning and resource management can likewise be improved by the IRM process. The establishment of information plans and their coordination with other planning activities can lead to more effective plans and more efficient execution of those plans. This efficiency can result in reduced waste of all resources and, thus, avoid certain costs by freeing resources for other activities.

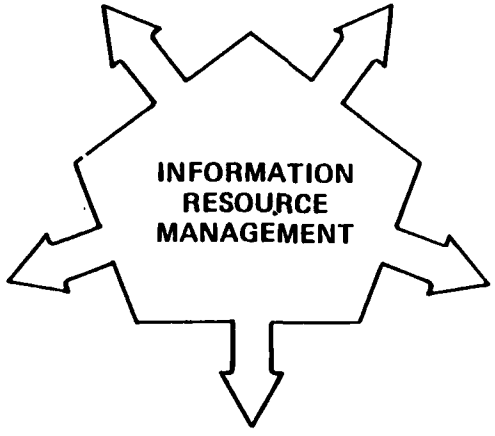
Benefits of Information Resource Management

HQDA–WIDE

- Control of Information Costs
- Improved Information Sharing
- Coordinated Information Planning
- Consistent Information Policies
- Compliance with Federal IRM
- Reduced Reporting of Redundant Data

HQDA TOP MANAGEMENT

- More Consistent Information
- More Effective Operational Decision-Making
- Improved Planning and Resource Management
- Increased Responsiveness to Information Requests
- More Effective Reports to OSD and Congress



HQDA INFORMATION SUPPLIERS

- Reduction of Reporting Burden
- Coordination of Requirements and Supply
- Potential Model for Field IRM

HQDA STAFF AGENCIES

- Action Officer Assistance
- Information Planning and Budgeting
- Establishment of User's Information Rights
- Assistance for User Request Formulation
- Consistent and Accurate Information
- Knowledge of where Data is

HQDA DPIs

- More Cost-Effective Information Systems
- Increased Support for Data Standards
- Support for Distributed Processing
- Progress Toward Organizational Maturity
- Consistent and Accurate Data when Shared with Other HQDA DIPs

EXHIBIT I-3

The IRM process is a mechanism for the individual Staff Agencies to manage their own information in a coordinated way so that consistent answers are supplied to requests made by top management as well as those received from users external to HQDA. The flexibility provided by managing information, as opposed to managing systems, can contribute to improved responsiveness through the support of "what if" drills and analytical models.

The information which the Army Staff presents to OSD and Congress is crucial to their decisions about resource allocations as well as their perception of the Army's image. Coordinated, consistent information can assist the Army at critical moments in defending its budget requests and explaining its programs. The IRM process can contribute to HQDA's relations with OSD and Congress by organizing the information acquisition, processing, and presentation activities toward this objective.

(2) IRM will benefit the suppliers of information in the field and within HQDA by reducing the reporting burden, coordinating the user's requirements for information with the supplier's own needs, and providing a model program for information resource management in the field.

Providing information to the Army Staff is a costly activity both for the Army at large as well as for the Staff itself. The identification and coordination of the information requirements of the HQDA Staff Agencies can effectively reduce the reporting burden on the field by consolidating information reporting channels. With proper planning by IRM, the field commanders can report specific information to a particular designated agency, and the other agencies can obtain the information they need from that proponent. Through planning and accounting for information costs, the Staff Agencies would become more aware of the reporting burden which their requests for information impose on the field.

Formal identification of user needs for information and inventories of information currently supplied can provide an opportunity for improved coordination of the information flows between organizations. Information which can be provided to a requestor as part of the normal reporting process will have much less adverse impact on the supplier than requests for information to be collected or aggregated in some unique way. The IRM process within HQDA is a mechanism for identifying and coordinating user needs with supplier capabilities. The establishment of effective chargeback schemes for information will contribute to shifting some of the responsibility for information costs from the suppliers and handlers to the users themselves.

Information resource management is a process which is applicable to a large variety of government and private organizations. It is applicable to the individual Army Staff Agencies as well as to HQDA as a whole. IRM may also be applicable

to the Army in the field. The establishment of a HQDA IRM program can serve as a model for the MACOMs and other Army components as they strive to address their specific information problems. The lessons learned by HQDA in establishing and operating its IRM program undoubtedly would be of benefit to the rest of the Army.

(3) IRM will benefit HQDA's individual Staff Agencies by helping Staff Action Officers to locate and assemble information, encouraging Staff Agencies to plan their information needs and budgets, establishing user's rights to information, and assisting users in formulating their requests.

Information resource management is a way of doing business within as well as among the HQDA Staff Agencies. IRM can benefit a Staff Agency in managing its own information by providing information locators, data dictionaries, and data bases about the information available to Action Officers to help them complete their data collection activities more rapidly. The resultant time savings can free the Action Officer to devote more time to analytical (as opposed to clerical) activities. Further, the analytical process can be facilitated through the availability of important context data about the information which contributes to its proper understanding and use.

Planning for information requirements in a formal way will help the Staff Agencies to identify information problem areas and to focus on their resolution. The Agency Information Plan can serve as a coordinating mechanism for the development of information systems in response to the information requirements. The identification of and budgeting for information costs can assist Staff Agency managers in improving the management of their information collection and processing activities by providing a mechanism for a cost/value trade-off analysis.

The members of HQDA have need for information in order to perform their mission, and a basic right to receive this information. The IRM process reinforces this right through the information planning process, but it also establishes responsibilities for information users, handlers, and suppliers. It is through the formal identification and enforcement of information rights and responsibilities that mutual confidence, cooperation, and sharing can be achieved within and among the information user, supplier, and handler communities.

In being aware of the costs and difficulties involved with meeting users' information requirements, the users themselves can become more adept at expressing their requirements in more cost-effective ways. Further, the IRM tools and information systems can assist the user in formulating a request by providing adequate clarifying contextual information prior to initiating the search. This assistance can be provided regardless of whether the information search is automated, manual, or a hybrid approach.

IRM is the managerial process of organizing information to facilitate its cost-effective use.

(4) IRM will benefit the HQDA DPIs through developing more cost-effective information systems, facilitating the application of data standards, supporting the transition toward distributed processing, and contributing to the DPIs' progress toward installing new information handling technologies.

An information resource management program can assist the cost-effective development of information systems by establshing stable definitions for information, identifying alternative sources of information which may preclude the need for a new system, and providing a framework for the identification and verification of information system requirements. The results can include reduced duplication of information and system development effort, reduced demand for computer resources to process essentially the same data, and a reduction in system redesign costs as changes occur in the system requirement.

The ongoing DA data standards program can be revitalized in HQDA systems and DPIs through the institution of a HQDA IRM program. IRM can provide an information focus to the data standards area and attract more user and management attention to the vital role of data standards. The IRM program can point out the need for information standards in the requirements planning, reporting, and metadata management activities as well as the development of effective computer programs.

The trend toward distributed processing and proliferation of automation in HQDA is clear. Minicomputers, microprocessors, word processing equipment, on-line terminals, and computer networking all portend a transition toward the distribution of ADP technology throughout the Army Staff. While the management of this automation process is important, the management of the information which the equipment will process is also necessary to allow the users of this distributed equipment to communicate meaningfully.

HQDA, as an organization, is progressing through Nolan's six stages of ADP growth (Harvard Business Review, March/April, 1979). While Dr. Nolan contends that each stage (initiation, contagion, control, integration, data administration, and maturity) may be necessary in an organization's growth, the impacts and mistakes of the early stages can be reduced through effective management of the growth process. Individual DPIs at HQDA may be considered to be in different stages of ADP growth, but the establishment of a HQDA IRM program can contribute significantly toward the growth and maturity of each DPI as well as the maturity of HQDA as an organization.

(5) IRM will benefit HQDA as a whole through identifying information costs, facilitating information sharing, coordinating information plans, promulgating consistent information policies, and complying with Federal IRM initiatives.

The explicit identification of information costs and the establishment of accountability for incurring such costs will assist in the overall control and eventual reduction of the costs associated with acquiring, processing, transmitting, storing, and presenting information. The IRM process will establish in HQDA a mechanism for determining and aggregating information costs. Accounting for information costs will help HQDA assess the efficiency of its operations.

The sharing of information among the Staff Agencies will be facilitated through the identification of information inventories, the establishment of information locators, and the coordination of information requirements, collection processes, and representation. Information sharing will result in reduced costs, more consistent answers, and information synergy among the Staff Agencies. IRM is a mechanism for encouraging information sharing on a widespread basis across HQDA.

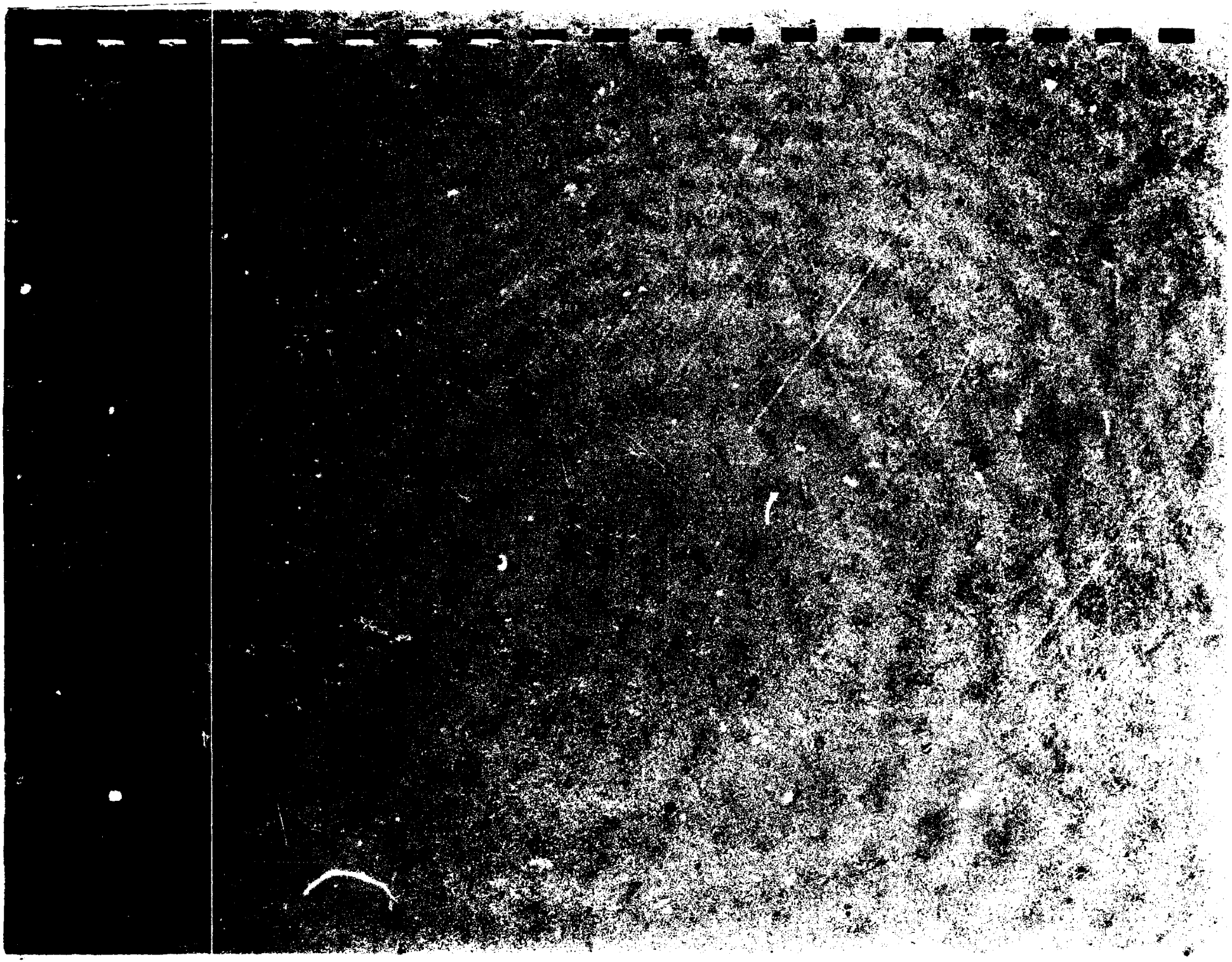
The development of a coordinated information plan for HQDA will assist in the identification of information requirements, potential sharing opportunities, information shortfalls, and areas of information conflicts. The HQDA IRM program will encourage the development of individual Staff Agency information plans and their consolidation into a HQDA-wide information plan. The program will provide a HQDA perspective to present planning activities which center around individual information systems.

The promulgation of consistent and complementary information policies under an IRM program will reduce the incidence of independent and contradictory policies and, thus, will facilitate agency compliance with those policies. The IRM program will provide a unifying conceptual framework for many existing information policies as well as lead the development of new policies for the management of information. Central leadership from HQDA on information policies will assist the Staff Agencies and DPIs in setting their own local policies and practices.

The IRM program which Arthur Young & Company has developed for HQDA is highly compatible with two current Federal initiatives in information resource management: OMB Circular A-40 and H.R.-6410. The new OMB Circular A-40 which is now out for review deals with the Federal Reports Act and provides a new, much broader information resource management interpretation. It recommends the establishment of an information collection budget, the justification of all information needs, and a heavy reliance on information sharing over independent (and redundant) collection.

H.R.-6410 is a bill now pending in Congress entitled, "Paperwork Reduction Act of 1980". The clear thrust of this legislation is information resource management and the need for an IRM structure in each Federal Agency. By proceeding with a reasoned approach to developing its own IRM program, HQDA will be in an excellent position for complying with both of these new initiatives and for setting a precedent for other agencies to follow in lieu of reacting to other initiatives later on.

In this report we present the design of a program for information resource management of automated information at HQDA. In the next chapter, we discuss the historical progress and present status of information management at at HQDA. Chapter III describes the design framework of the new IRM process in HQDA. Chapter IV discusses the fundamental policy concepts of IRM, and Chapters V and VI discuss the detailed design of the management and functional programs respectively. Chapter VII presents an information costing methodology for HQDA and Chapter VIII describes the Information Resource Information System. Chapter IX discusses the factors and premises impacting the organizational design for IRM, and Chapter X presents our proposed IRM organization for HQDA. Chapter XI describes the implementation of IRM for HQDA and Chapter XII concludes the report with our study recommendations.



II. RELEVANT HQDA INFORMATION MANAGEMENT ACTIVITIES

Information is a valuable resource of Headquarters, Department of the Army (HQDA). Though currently not formally recognized by HQDA management and staff, this fact is evidenced by HQDA's extensive reporting requirements, its many complex management information systems, and its large investment in data processing equipment, software, and personnel. As the major planning and resource management activity of the Army, HQDA's primary function is centered about the acquisition, distribution, processing, storage, use, and dissemination of information. The fundamental HQDA activities of program planning, operational decision-making, resource allocation, and budgeting, all rely on accurate, timely, consistent, and comprehensible information. HQDA is an information-based organization and, yet, HQDA is not effectively managing its information in support of the total HQDA mission.

The purpose of this chapter is to describe the relevant history and current state of information management activities within Headquarters, Department of the Army. These findings are based on the Phase I & II study activity and analysis and are presented as follows:

- HQDA's Progress Toward the Management of Information
- Current HQDA Information Management Roles and Activities
- Analysis of the Approaches to Manage Information at HQDA
- Relevant Federal Information Resource Management Initiatives.

Our discussion on each of these subjects is found in the following sections.

1. HQDA'S PROGRESS TOWARD THE MANAGEMENT OF INFORMATION

In order to develop a program for information management at HQDA, it is important to understand the historical and current HQDA progress toward managing information. In this section, we briefly discuss the historical attempts to manage this information and some recent and ongoing information management projects at HQDA.

The history of the management of automated information at HQDA depicts a dynamic organizational environment as the Army analyzed ways of organizing itself to manage its automation and management information systems more effectively. Among the early attempts to manage information was the creation of the Office of the Special Assistant to the Chief of Staff for Army Information and Data Systems (AIDS) in the 1960's. This organization was established to raise the automated data processing/management information systems (ADP-MIS)

function to the chief of staff level, to establish disciplined development procedures for major ADP-MIS projects, and to provide centralized control for ADP systems and equipment acquisition.

When the Army staff reorganized in 1967 it established the Management Information Systems Directorate (MISD) in OCSA to provide automated systems in response to management requirements. The Comptroller of the Army was given authority as the senior Army staff policy official for ADPE. The Comptroller had responsibility for all ADP hardware, software, training, and career management. However, because of the organizational split in the ADP-MIS function between MISD and the Comptroller, and the increasing complexities involved in automated information systems management, a study of management information systems support (SOMISS) was conducted in 1968. The SOMISS recommended central control of the ADP-MIS function, an ADP-MIS management structure, and a structured approach to the ADP-MIS activities.

As a result of the SOMISS recommendations all ADP functions were brought back together into MISD. Systems were designed based upon specific information requirements from top-to-bottom rather than from bottom-to-top. This approach established the vertical structure from top-to-bottom for each of the management functions. In creating these "stovepipes" the task of designing standard operating systems for horizontal levels was made more difficult. However, a series of reviews were scheduled in the mid 1970's to provide an extensive examination of the direction and purpose of the Army automation program. Once these reviews were defined and scheduled, a Tactical Automation Appraisal (TAA) was held at HQ TRADOC. This appraisal focused high level attention on the automated tactical command and control and the lack of a focal point of the Army staff to coordinate automation matters.

In August 1976, the Vice Chief of Staff directed the Management Directorate at OCSA to develop a charter and directives for the central manager of Army automation in the Office of the Chief of Staff. The Army Automation Management Study of 1977 was based upon that directive. The conclusions reached during that study indicated that automation policy responsibilities were fragmented and duplicated, and that automation planning by functional proponents was incomplete and not adequately integrated.

Following the Army Automation Management Study, the charter for the Director of Army Automation (DAA) was developed. The DAA had overall authority and responsibility for total Army-wide automation management and managed through macro-level policy, master planning, and resource management responsibilities specified in the charter and implementation documents. During 1978 the DAA function was reorganized and combined with the Telecommunications Directorate of DCSOPS to form the Assistant Chief of Staff for Automation and Communication (ACSAC). The reorganization was a further effort to provide one overall responsible authority for automation and communication for the Army.

The Chief of Staff completed a study in 1978 to analyze the resource management capability of the Army Staff as then organized. The primary purpose of the study was to evaluate the applicability of a Deputy Chief of Staff for Resource Management to the HQDA staff structure and to recommend changes needed to provide optimum HQDA Staff capability for effective resource management. The study resulted in several recommended changes to the existing HQDA staff structure and functions. Of particular interest to our HQDA Information Management Project was the creation of a Resource Management Policy Office in the Comptroller of the Army's organization. This new office's broad mission includes the development of Army-wide policy for the effective management of resources, but their charter does not specifically mention information as a resource to be managed.

The Army Staff Administrative System (ARSTADS) study currently being conducted by TAG is an attempt to develop an automated administrative support system which will serve to provide integrated support and increase both administrative efficiency and effectiveness. The Army Staff does not have a complete, integrated system for receiving, creating, maintaining, retrieving, storing, or disposing of key documents and information. As a result, technologies are being proliferated without a system plan and the action officers are working independently in an undisciplined administrative environment without adequate support. The study also focuses on managing administrative information as a resource. The objectives of the ARSTADS study are to:

- Identify ARSTAF Requirements for Administrative Support
- Identify a System Capable of Meeting those Requirements
- Develop a System for Administrative Support in a Pilot Mode
- Extend the System to ARSTAF at large
- Identify the Agency/Activity Responsible for Operating, Supervising, and Managing the System.

The goal of that study is to include more effective and efficient administrative support, including the capability to balance workload. Administrative Support procedures would be standardized to meet agency requirements. Action officier capabilities to research, prepare, and staff action papers would be enhanced.

2. CURRENT HQDA INFORMATION MANAGEMENT ROLES AND ACTIVITIES

The purpose of this section is to discuss the current status of specific existing information management activities from a HQDA-wide perspective. Several organizations have HQDA-wide roles related to information management, and our discussion centers on how each of these roles relates to the information management activities currently performed at HQDA. Each of these activities and roles is discussed in

greater detail in the Phase I report. The information management activities to be discussed are the following:

- Information Systems Planning
- Data Base Administration
- Data Standards
- IRM Technology Assessment
- Forms, Records, and Reports Management
- Quality Assurance and Compliance Audit.

(1) Information Systems Planning

Information systems planning is being performed by several agencies and activities in HQDA. The ACSAC is responsible for automation and communications planning, planning the integration of tactical and non-tactical communications and automation plans, and relating those plans to overall Army goals and objectives through the automation and communication network. The DCSOPS is responsible for the tactical aspects of systems planning, and the DCSRDA is responsible for the research and development aspects of system planning.

A detailed description of the current planning process for Army automated information systems is found in AR18-1. This regulation discusses requirements for submission into the overall AMIS Master Plan and a structured process for systems approval. Emphasis is placed on hardware and software considerations in this approval process. Planning efforts tend to focus on equipment procurement and acquistion actions. Information requirements and related data collection and storage, as well as systems integration and data sharing are not throughly presented nor discussed.

(2) Data Base Administration

There is currently no formal HQDA-wide data base administration program. Data Base Administration involves the coordination of user requirements with system capabilities, the education of the users of information regarding the contents and availability of information, and the maintenance of information about information or "metadata" through the use of a data element dictionary/directory that defines and locates various data elements stored in information systems. Data Base Administration also concerns the technical aspects of design, development and maintenance of the data base environment. Data base administration tools such as an information resource directory have not been developed at the staff agency organizational level.

Most information searches through automated files are still done on a manual basis. The action officer and related informal networks are used to satisfy information requests. However, a number of DPIs have been employing data base administration concepts in the management of their organizations and related information systems. Data dictionaries have been created for a few of these systems. However, an informal program of information exchange through the HQDA DPA Conference Software Committee was discontinued by the ACSAC in January 1980.

(3) Data Standards

The Army Data Standardization program manager is located at the United States Army Computer Systems Command. The ACSAC provides overall program policy and guidance for the Information Processing Standards Program and directs the enforcement and use of automation standards throughout the Army. Little attention is directed at the standardization needs of HQDA DPIs by the Army program manager.

The Army staff agencies and major commands are responsible to maintain and enforce the use of ADP and data element standards within their areas of responsiblity, develop proposed Army ADP and data element standards related to their areas of responsibility, and provide them to USACSC for review, evaluation, and approval as Army standards. They are also to participate in the development of Army and higher level ADP and data element standards through review and committee involvement. Very little input has been developed by the HQDA DPIs to the standards program.

There are a variety of standardization programs for the Army to follow, yet there is no agreed upon hierarchy of which standard takes precedence. The absence of a standardization hierarchy has made the current information standards program difficult to manage and confusing to the implementers of information systems. As a result, the standards program is not rigorously followed by the DPIs and Staff Agencies and the objectives and need for standards are not totally appreciated nor adequately supported by HQDA top management.

(4) IRM Technology Assessment

Information resource management technology assessment in the Army is scattered across the Staff Agencies and DPIs. These assessment efforts are generally more directly connected to individual Staff Agency information systems planning. However, the Army Institute for Research in Management Information and Computer Science (AIRMICS) performs a major role in the information technology assessment activity for the Army. Organizationally, AIRMICS reports to the Computer Systems Command; however, its budget and program must be approved by DCSRDA. AIRMICS, while reporting to USACSC, has the mandate for

Army-wide (including HQDA) information systems research. The Agency receives input from other Army commands and activities via its technical conferences and programs. The Agency has not yet worked in the area of horizontal information management activities but is preparing to study the functions of a Data Administrator. AIRMICS has been involved in projects that concern areas of interest related to information management such as advances in data base management, information requirements specification, and distributed processing environments.

(5) Forms, Records, and Reports Management

The Forms management function which is being performed throughout the Army is the responsibility of The Adjutant General (TAG). Forms management is the review of all HQDA forms to ensure that information is not redundant and that such forms, including automated forms, remain useful. The Army organizations cannot initiate a new form for gathering information without approval of the Agency forms management officer. HQDA forms are approved by the responsible activity in TAGO.

Records management is also controlled by The Adjutant General. The records management program provides for the control, filing, and disposition of all manual and automated records, such as microfilm and microfiche, archival procedures, and maintenance of records until they may be destroyed. The records management activities of organizations are normally reviewed by organization administrative personnel (records management officers) and noted deficiencies are required to be corrected. The Inspector General reviews the records management program for TAG. TAG is assisted in the management of records throughout the Army by having the responsiblity for all micro-graphics management activites, including policy formulation concerning micro-graphics.

The reports management or requirements control program is the information requirements management and analysis program in the Army. All HQDA level organizations are required to have a Management Information Control Officer (MICO) who is responsible for coordinating manual and automated information requirements reviews and adding or deleting reporting requirements in accordance with TAG promulgated regulatory guidance. The requirements control program includes both manual and automated information and also controls new information requirements as they are developed.

(6) Quality Assurance and Compliance Audit

Quality Assurance is usually relegated to individual users and DPIs at HQDA. There are no information quality assurance guidelines above the functional staff/DPI level.

It is important to note that there are organizations at HQDA which have a strong audit role. These include the Army Audit Agency and the Inspector General. Those organizations may review systems, but they tend to concentrate on specific ADP problem areas and not on information problems such as those identified previously.

3. ANALYSIS OF THE APPROACHES TO MANAGE INFORMATION AT HQDA

As previously discussed, there have been numerous efforts and attempts to provide some managerial control over automated information at HQDA. However, these efforts have been and continue to be disjointed. They lack a unifying direction, and are not uniformly supported throughout HQDA. One result is a collection of "stovepipe" information systems, each designed to support a specific user group but which are not collectively effective in terms of system interoperability or information sharing. These efforts only go part of the way toward solving the information problems at HQDA.

Exhibit II-1 depicts the approaches used at HQDA to manage information. Around the perimeter of the diagram are indicated approaches which HQDA has employed in attempting to address its information problems. These include attempts to manage: the media on which information is stored, the equipment which is used in processing it, the systems which transform the information for a particular application, the use to which the information will be put, and the subject matter of the information. Each of these managerial focuses are significant and useful in their own right; however, their individual orientations can lead to conflicting priorities and needs and do not solve the basic problem.

The narrow focus on each of these approaches results in the development of disjointed policies and information. These efforts lack a unifying direction, are not uniformly supported, and only go part way toward solving the information problems identified in Chapter I. Although each approach is important in its own right, a new approach should be pursued which focuses on the information itself. The management of information (the center circle in the exhibit) cuts across each of these approaches and provides a unifying direction for common functions performed in each of the other areas. The management of information focuses on the characteristics of the information itself (e.g., representation, content, ownership, and quality) irrespective of the system which employs it, the use to which it will be put, or the subject with which it deals. In this manner, information is viewed as an organizational resource which is to be managed for the benefit of all within HQDA. This is not to say that information should be managed instead of automation, for example, or instead of managing official records, but rather in addition to and in close coordination with these management processes.

Approaches to Managing HQDA Information

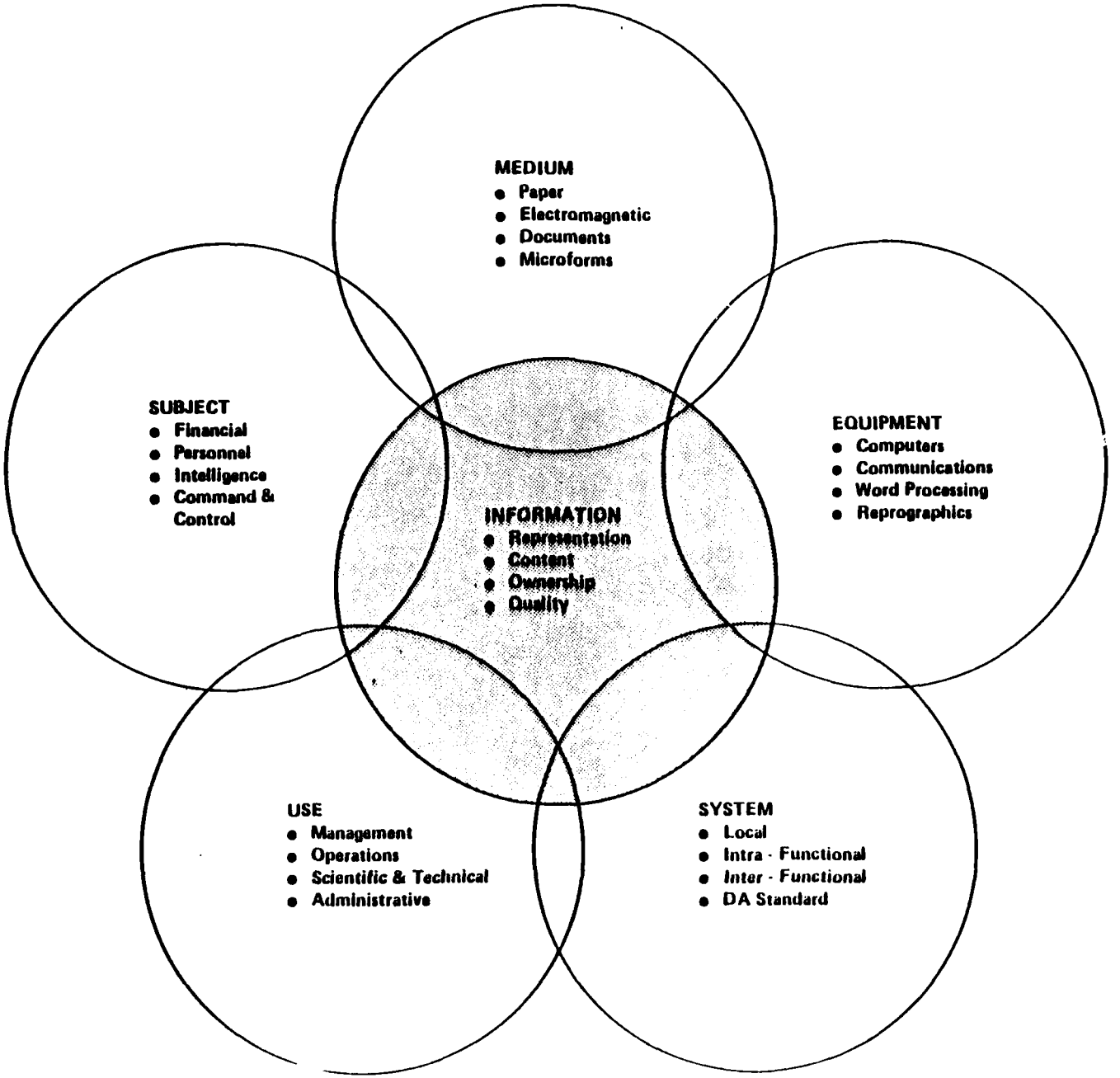


EXHIBIT II-1

4. RELEVANT FEDERAL INFORMATION RESOURCE MANAGEMENT INITIATIVES

Information Resource Management is a relatively new approach in the Federal Government and Private Industry. As a result, there may be some disagreement on the details of the IRM concept as different organizations strive to define what IRM means for them. Nevertheless, the clear signals from Government and Industry alike are that viewing information as a valuable organizational resource is a proper course of action. HQDA has an opportunity to take advantage of its early start in defining an IRM process best suited to its needs; however, this is not to say that HQDA should move far out in front of the Federal Community in terms of information resource management. Several other agencies and departments external to HQDA are also currently embracing the philosophy and the concepts of information resource management. They are attempting to translate that philosophy into meaningful programs for their respective agencies and department. Several of the current Federal IRM initiatives are discussed below.

(1) The Environmental Protection Agency

The Environmental Protection Agency (EPA) has recently conducted a study to determine the agency's requirements for a coordinated data management and standardization program. The project is in response to EPA's growing awareness that information is a resource and their commitment to manage it as such. Beyond the identification and quantification of the requirements, EPA is addressing the alternative policies and procedures necessary to implement and maintain a program to set and enforce standard data definitions and coding schemes. In addition, various methods of cataloging data attributes for ease of dissemination are being evaluated such as data dictionaries, directories, and catalogs. Currently, EPA is evaluating the ability of the program to succeed in the current organization and the organizational changes necessary to implement a successful program.

(2) The Department of the Treasury

The Department of Treasury has officially declared its information to be a valuable resource and has charged each of its bureaus and the Office of the Secretary with the responsibility for managing its information resources. Treasury is establishing a program for Information Resources Management which will be headed by an official to be called the Information Resources Manager. Treasury is attempting to integrate the information disciplines from each of its bureaus in order to make use of all available information resources which includes the traditional resources management activities, data processing, management information systems, productivity and procedures analysis. Treasury is also scheduling program evaluations to assure the most efficient and economical use of its information resources. The IRM staff will eventually review each bureau IRM office to make recommendations for improving IRM operations. Treasury intends to assure that its information resources are used wisely and well within the limited means available in the current days of tight budgets and strict controls.

(3) Office of Management and Budget (OMB)

On July 15, 1977, the Commission on Federal Paperwork (CFP) sent a report to the President and to the Congrss entitled "The Federal Information Location System." One of the major recommendations made by the Commission on Federal Paperwork called for the establishment of a Federal Information Locator System (FILS). It also recommended that a task force evaluate several existing systems and consider the need for a comprehensive Federal dictionary of common terms, codes, symbols, and other metadata. As a result, OMB decided to convene such a task force and conduct a pilot test of the Department of Defense's Information Requirements Control Automated System (IRCAS). The task force was also to look at other locator systems in order to determine the best approach for meeting the government-wide needs, as well as the major components of the overall system requirements. The report of Working Group 1 on the requirements planning and evaluation makes several recommendations to the FILS task force. These recommendations are being considered in the design and implementation of the Federal Information Locator System currently underway within OMB.

On November 30, 1979, President Carter issued Executive Order 12174, "Paperwork". This order establishes procedures that are to aid in the elimination of all paperwork burden on the public above the minimum necessary to determine and implement public policy and ensure compliance with Federal laws.

It was ordered that:

- Agencies shall minimize the paperwork burden -- i.e., the time and costs entailed in complying with requests for information and recordkeeping requirements -- imposed on persons outside the Federal government

- Each agency shall designate an existing official to be responsible for minimizing both the agency's use of forms and the paperwork burden resulting from proposed legislation and regulations

- Agencies shall pay particular attention to the special burdens faced by individuals and small organizations in responding to request for information.

- Each agency shall prepare an annual paperwork budget, i.e., an estimate of the total number of hours required to comply with requests for information

- Forms or similar requests for information shall be reviewed within two years after their initial issuance and then at least once every five years

- OMB shall audit compliance with this Order and may issue rules and regulations necessary to implement it. OMB shall:

  - Seek to eliminate duplication in requests for information by establishing a Federal information locator system, which will list all the types of information collected by Federal agencies and will be available for use by all agencies

  - Seek to inform the public and broaden public and agency comment by preparing and publishing in the Federal Register an annual paperwork calendar of significant requests for information.

  - Report annually to the President on implementation of this Order and control of the paperwork burden generally.

The new OMB Circular A-40 which is now out for review is intended to carry out this order. In addition, it is intended to increase the effectiveness of the governments paperwork control effort and implementation of the Federal Reports Act. It provides a new, much broader information resource management interpretation. It recommends the establishment of an information collection budget, the justification of all information needs, and a heavy reliance on information sharing over independent and redundant collection.

(4) The Department of the Interior

The Department of the Interior has recently issued an order No. 3045, effective January 21, 1980) whose subject is a realignment and reassignment of certain administrative functions and responsibilities. This order outlines a reorgranization of these administrative offices under the jurisdiction of the Assistant Secretary for Policy, Budget and Administration. It documents the establishment of an Office of Information Resources Management.

The Office of Information Resources Management will be responsible for policy guidance, program direction, and departmental authority for information resources management programs and systems activities from non-automated information systems to the most sophisticated automated data processing (ADP) systems throughout the Department. Specific functional areas include Departmental Policy for: ADP and computer related storage and retrieval systems; word processing; micrographics; paperwork management; telecommunications activities; non-automated information management systems; policy and standards for organization structures; and conducting management studies.

(5) Federal IRM Legislation

HR-6410, (formerly HR-3570) is a bill sponsored by Congressmen Brooks and Horton which is now pending in Congress. It is entitled, the "Paperwork Reduction Act of 1980." The clear thrust of the legislation is information resource management and the need for an IRM structure in each Federal Department. The bill would create a central office in the Office of Management and Budget (OMB) responsible for setting Government-wide information policies and for providing oversight for Federal agencies information management activities. Such oversight would include periodic evaluations of the agencies' information management activities. The activities covered by the bill include reports clearance and paperwork control, statistics, privacy, automatic data processing, telecommunications, and records managmeent.

Each individual agency would be responsible for carrying out its information management activities in an efficient and economical manner, and for complying with the information policies, principles, standards, and guidelines prescribed by OMB. The head of each agency would designate, within three months of the date of enactment of the bill, a senior official who reports directly to the agency head to carry out the responsibilities designated by OMB. Each agency would also systematically inventory its major information systems and periodically review its information management activities, including planning, budgeting, organizing, directing, training, promoting, controlling, and other managerial activities involving the collection, use, and dissemination of information. The agencies would also need to take steps to ensure that their information systems do not overlap each other or duplicate those of other agencies. They would also develop procedures for assessing the paperwork and reporting burden of their information collection activities. The head of each agency would establish such procedures as necessary to ensure the compliance of the agency with the requirements of the Federal Information Locator System.

At the Legislation and National Security Subcommittee hearing on the paperwork reduction act of 1980, both Elmer B. Staats, the Comptroller General of the United States, and Phil Kiviat of the President's Federal Automatic Data Processing Reorganization Project, have testified in favor of the newly proposed bill (H.R.6410). They see the enactment of the bill as a concerted effort to establish consistent federal information policies, and the management structure and tools necessary to assist in working toward the solution for the many information problems now existing.

In addition to this bill in Congress, other instances where movement toward IRM is less formal include:

- Office of the Secretary of Defense
- Department of Transportation, and
- Department of Education.

These activities briefly show instances in the Federal Community of a trend toward recognizing information as a valuable resource of an organization

Private industry is lagging behind the Federal Government in terms of organizing for information resource management. Many top-level corporate executives have recognized the importance of information to their organization and the need to manage information as well as managing ADP. Most have followed the path of attempting to establish data bases, recognizing the need for data base administrators to manage the data, and realizing that data base administration is a large task of central importance to their organization. Some have established the position of a data administrator to address corporate policy with regard to data and information.

Concurrently, the vendors of ADP hardware and software and the telecommunications industry are working to supply improved methodologies and supporting products such as data base management systems, data dictionaries and directories, computer network control packages, requirements analysis support tools, and information systems planning methodologies. Information resource management is a terminology which is appearing more and more frequently in the literature, in marketing brochures, and in product descriptions. Tools are becoming available to support the establishment of an IRM program in an organization, but the definition of the objectives and structure of such a program are best left to the individual implementing enterprise.

The technological innovations in recent years in the form of increased central processing power, enhanced telecommunications, improved control over distributed systems, more efficient data entry procedures, more effective information presentation, and expanded data storage capacities have made possible significant increases in the collection, transmission, processing, storage, and distribution of information. Such improvements in hardware, coupled with software advances such as timesharing, data base management systems, data element dictionaries and directories, and information requirements specification aids have contributed to the development of larger and more complex information systems to assist in the production of information to meet the needs of HQDA. However, such improvements also contribute to an increased demand for more information and more information processing.

As previously discussed, numerous attempts have been made to address the problem of managing information - to determine the

information needs of HQDA and to provide that information in the most cost-effective manner. The creation of large integrated data bases; the formalization of information system requirements and specifications; the establishment of forms, records, and reports management procedures; and the institution of Army-wide standards for data elements and hardware and software tools have each contributed, in part, to the management of information, but these efforts have not been properly coordinated.

Arthur Young & Company has designed an initial program for HQDA to manage its automated information resource. This program is compatible with recent Federal initiatives in information resource management as well as the current HQDA environment. In the remainder of this report we present this initial program design and recommend it as a first step for HQDA in the direction of managing its information as a resource.

III. THE DESIGN FRAMEWORK OF THE HQDA IRM PROCESS

In the preceding sections of this report we have described the problems that HQDA is experiencing in managing its information resource and we have presented the philosophy of a comprehensive HQDA-wide IRM process as a possible solution. In the remainder of this report we will present the way this philosophy can be translated into a practical and operational design.

In order to facilitate the understanding of the design, we have structured it as a sequence of the following four levels:

- The Design Framework which describes the definition of IRM and the design objective, premises, and scope
- The Fundamental IRM Policy Concepts which establishes the foundation on which the rest of the design is based
- The Management Structure of the IRM Process which describes policy concepts and the way the IRM process is to be managed
- IRM Implementation which describes the organizational placement of the IRM process, the resource requirements and the implementation schedule to establish the IRM process.

A graphical presentation of these levels and their relations is given in Exhibit III-1 and their detailed discussion is given in the remainder of this report. In this chapter the design framework is presented which covers the following:

- The conceptual model of IRM
- The design objective
- The design premises
- The design scope.

These definitions provide the content within which the design has been developed and its features are to be interpreted.

1. THE CONCEPTUAL MODEL OF IRM

The first task in the design of the IRM process has been the development of a conceptual model in which the principal concepts of IRM and their relationships are defined to provide the basic structure around which the features of the IRM process can be designed. A

IRM Design Structure

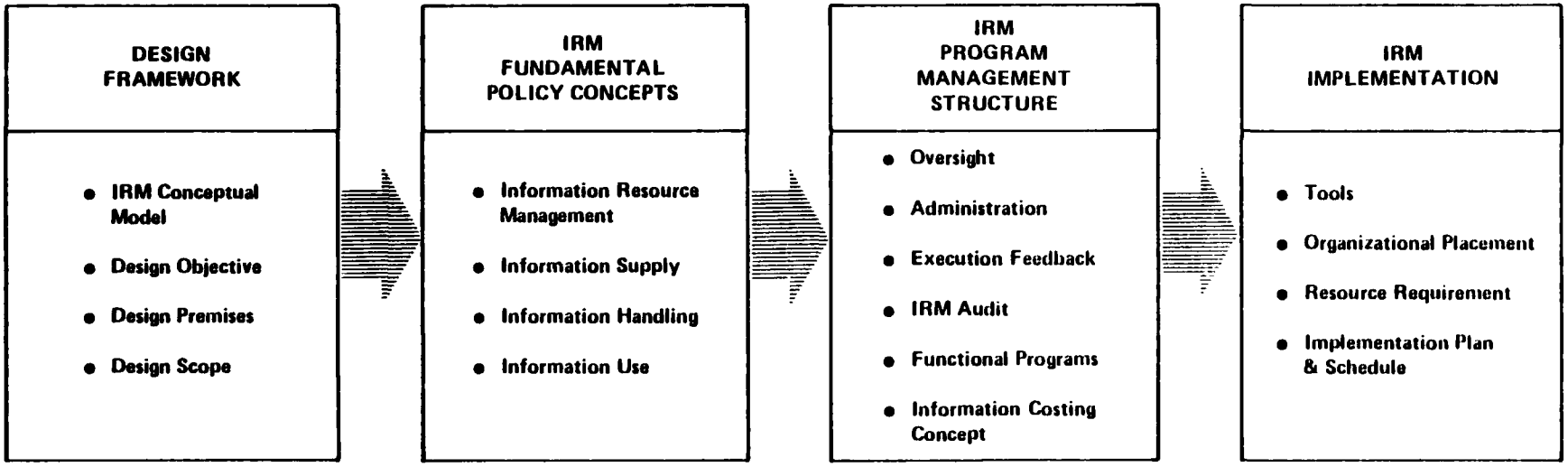


EXHIBIT III-1

graphical presentation of this conceptual model is given in Exhibit III-2. The model is composed of the following parts:

- Information Life Cycle: the description of the phases in the life of an information item. This description is a prerequisite to defining IRM because the management of information is carried out through the management of its life cycle phases.
- IRM Objective: the objective towards which the management of information is directed.
- IRM Process: the activities performed in the process of managing information through its life cycle phases.

In the following discussion these concepts and their relationships are described.

(1) Information Life Cycle

Information, from its inception until its purge, goes through a life cycle which is composed of three distinct, but interrelated phases. They are: the supply, handling and use phases.

The supply phase of information is concerned with making information available for handling and use. The supply of information occurs, for example, when an element of HQDA submits a report to another element, or, when an element allows another element to access information contained in its data bases.

The handling phase of information addresses the capture of information from its supplier, transporting it, processing it, and making it ready for use. The handling phase has seven primary steps, which are:

- Capture: e.g., recording data about a subject on a form, receiving a computer magnetic ta
- Entry: e.g., coding the information recorded on a form, preparing punched cards, keying the information through a remote terminal
- Transmission: e.g., mailing filled in forms, forwarding tapes, telecommunications
- Storage: e.g., long or short term storage of documents in archives or of information in computerized data bases
- Retrieval: e.g., retrieving information from a data base in response to a request

The Conceptual Model of the IRM Process

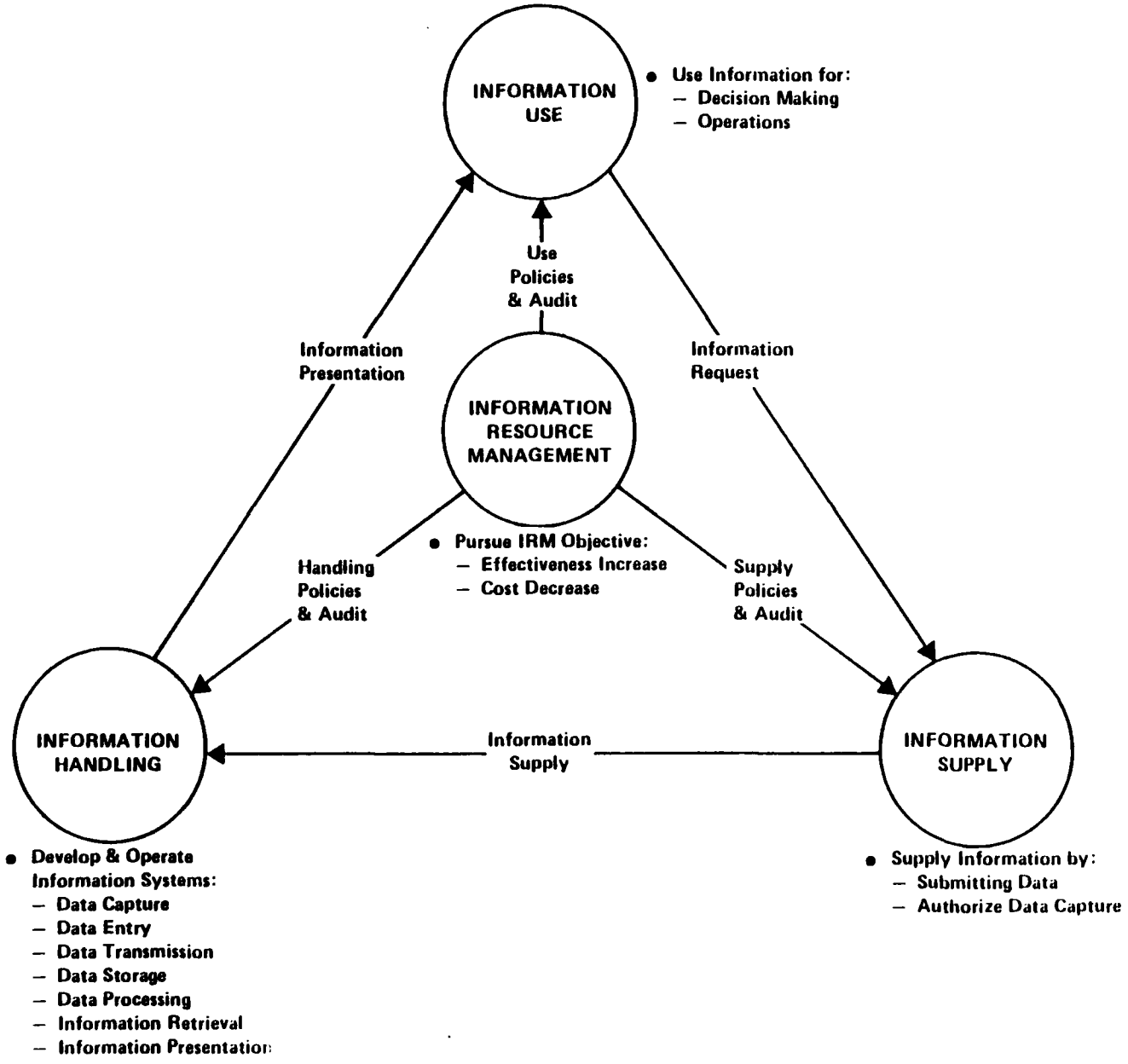


EXHIBIT III-2

- Processing: e.g., manipulating the information by a computer program, combining an information item with other information according to a procedure

- Presentation: e.g., generating a report, displaying information on a CRT device.

The handling phase is commonly performed through the organized network of the seven handling steps identified above. An information system which handles information goes through a life cycle of its own composed of several distinct phases which are graphically presented in Exhibit III-3. It is to be noted that the information systems life cycle deals primarily with the handling phase of information. It is different from the information life cycle as the latter addresses the broader aspects of information supply and use as well as its handling.

The use phase of information occurs when the information is recognized as a factor in some HQDA element's decisions or operations in achieving the element's mission objective. (For example, answering a Congressional inquiry, or assessing force status.)

It is to be noted that the supply of information is distinguished from its capture. The supply involves sending the information, or giving the authority for capture. The capture is receiving the information, or using the granted authority to capture the information. Also, the presentation of information is to be distinguished from its use. The presentation is making the information ready for use in a particular format. However, if the information is not a factor influencing the decision or operations of the potential user then it is not actually used. It is only presented. (For example, reports which are generated but never read.)

(2) The IRM Objective

The ultimate objective of managing information as a resource is to increase the effectiveness of its use and to decrease the cost of information throughout its life cycle from the overall HQDA viewpoint. The effectiveness of information is the product of several factors as presented in Exhibit III-4. The cost of information is the cost of other resources (personnel, machines, money, etc.) consumed in the information life cycle phases of supply, handling and use. In Chapter VII we present a more detailed discussion of costs of information and a methodology of information costing.

There are two primary requirements for achieving the IRM objective. They are information sharing and redundancy control. Information sharing increases information effectiveness as it

Information Systems Life Cycle

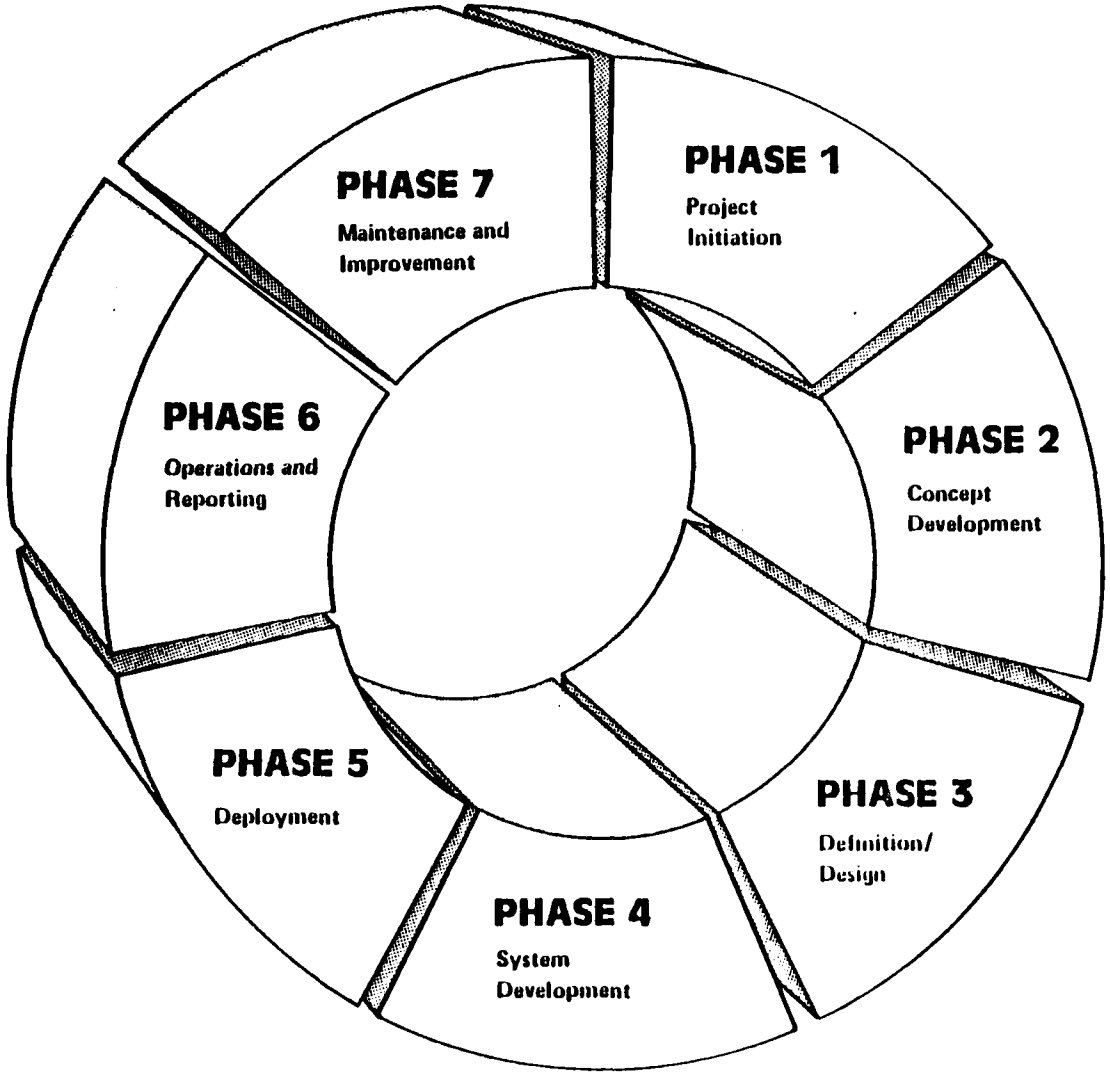


EXHIBIT III-3

The Information Effectiveness Factors

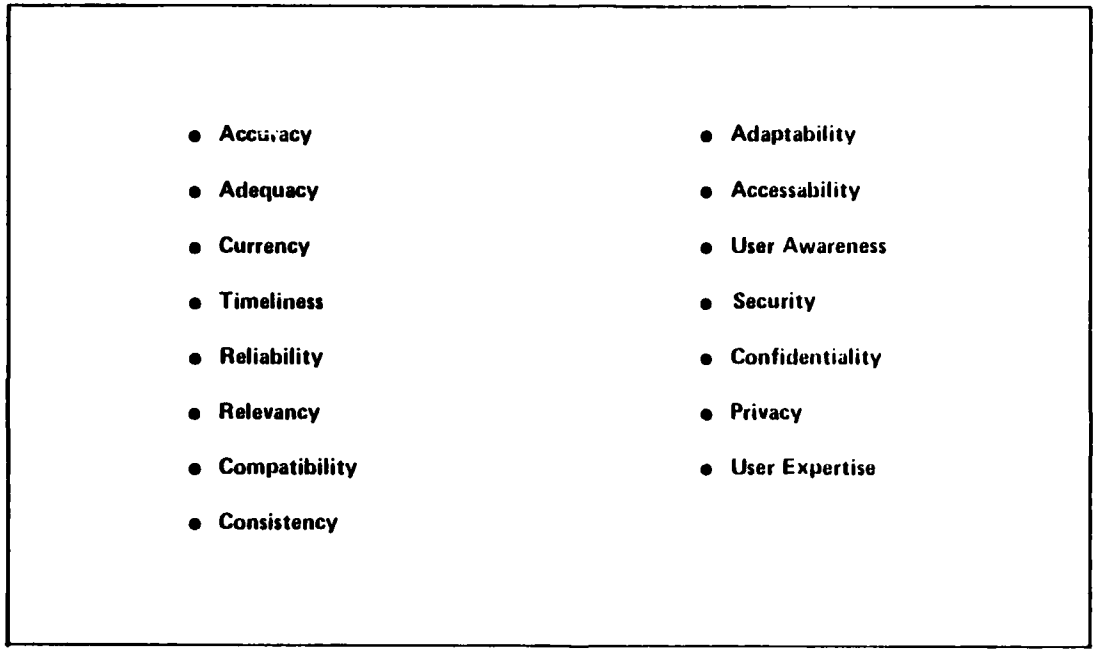


EXHIBIT III-4

leads to availability of new information to users who otherwise might not obtain that information. Also, sharing helps decrease the cost of information by dividing the fixed costs of information among more users. It must be noted that sharing, itself, has some cost such as the need for coordination or resulting security risks. In sharing information, the benefits and costs must be analyzed to avoid those instances where the cost of sharing information may be more than its benefits HQDA-wide.

Redundancy control is the process of identifying and avoiding unwarranted redundant activities in the supply, handling and use of information. Unwarranted redundancy could occur when information activities are not properly coordinated. For example, duplicate information may be captured, overlapping data bases may be maintained, or additional computing resources may be consumed when two information systems, both in need of the same data, are built without coordination. This, however, does not mean that redundant information activities are to be avoided in all cases and without exception. There are instances, of course, where redundancy is necessary in the interest of such requirements as increased reliability or improved security and decreased vulnerability to threats. In these instances such redundancy may be justified.

Redundancy control leads to freeing resources used in redundant information activities. Therefore, it can increase effectiveness as the freed resources could be used for new or improved information products. It also decreases conflicts which arise from inconsistent information obtained through redundant processes. It can decrease cost as less resources are used for information activities.

It should be noted that in many instances the decrease in information cost can be more the outcome of increase in its effectiveness than a decrease in expenditure. This is particularly true in those cases where heavy investment is made in ADP hardware and software. The cost of this investment is a fixed rather than variable cost, as it does not decrease with the decrease in the processing volume which might be brought about by information sharing or redundancy avoidance. IRM, in this sense, contributes to decreasing information cost by increasing its effectiveness for the user. For example, it helps users by making available to them information with higher consistency, accuracy and timeliness and thus, decreases the costs which could occur due to erroneous or delayed decisions caused by inconsistent, inaccurate and late information.

(3) The IRM Process

The management of information as a resource is conceived as a process rather than a short term activity because it affects and is affected by a large number of HQDA elements and is a continuous undertaking.

This process is carried out through the coordination of the life cycle phases of information items and in doing so, it is concerned with two areas. The first area is the coordination of the life cycle phases of a given information item to ensure that its phases are compatible and have a balanced emphasis. For example, it will ensure that the emphasis on accuracy in the handling phase is harmonized with the accuracy in the supply phase or with the requirement of the user. Without such balance of emphasis, high expenditure may be made to increase the accuracy of handling while the accuracy of the supplied input data is not high and thus the increase of handling accuracy is not justified.

The second area is concerned with the coordination of information items which are used jointly and as a group. To a user whose satisfaction requires simultaneous use of a group of information items, the attributes of the group of information items as a whole matters more than the attributes of each individual item. To achieve a desired group attribute, the attributes of the member information items must be coordinated for compatibility and balance. These two coordination areas are, more specifically, implemented through a number of informational functions which include the following:

- Information Planning, i.e., to identify and organize the information needs of HQDA elements
- Information Systems Coordination, i.e., to review information systems plans for compatibility, sharing and avoidance of unwarranted redundancies
- Data Standards, i.e., to set standards for data definition and presentation
- Data Base Administration, i.e., to coordinate the design, building and use of HQDA data bases
- Metadata Management, i.e., to manage the storing and retrieving of metadata - data about data
- Records Management, i.e., to manage the definition, storage and retrieval of short term and long term records of HQDA
- Forms Management, i.e., to manage the design and standardization of forms used for collection of information
- Reports Management, i.e., to manage the design and standardization of reports, their contents and distribution
- IRM Education, i.e., to educate the suppliers, users and handlers of information for implementing IRM

- IRM Technology Assessment, i.e., to promote and follow the progress of IRM Technology.

Each of these functions relate in one or more ways with the information life cycle phases. They primarily focus on achieving the two coordination areas described above within their scope by setting the required policies and procedures and ensuring their implementation. In the subsequent chapters of this report, these functions, their management structure and process are described in detail.

2. THE DESIGN OBJECTIVE

The second topic in the design framework is the definition of the objective of the design effort itself. This objective must be distinguished from the objective of the IRM process which has been described to be the cost-effective supply, handling, and use of information from an overall HQDA standpoint.

The IRM objective has long been recognized by HQDA and has led to a number of efforts towards its attainment. For example, forms, records, and reports management activities have been undertaken and regulations for ensuring the cost-effectiveness of information systems development have been instituted. These efforts have been in the right direction; however, progress towards the IRM objective has been lagging. The primary reasons are two basic shortcomings in the way the IRM process is currently being managed:

- The existing IRM related efforts, such as forms management and data standards, are not coordinated at the HQDA level. Therefore, even though each may be cost-effective within its own scope, their collective cost-effectiveness may be far below the level possible if they were coordinated. In fact, while individually effective, they may be in direct conflict with one another, resulting in substantial ineffectiveness and higher overall cost.

- There are other efforts which are crucial for achieving the IRM objective which are not currently being carried out. These additional activities are necessary to support the overall IRM process.

Thus, the design of the IRM process must be comprehensive so that all the necessary efforts are formulated and their relations identified. It must also be coordinated so that the collective outcome of the efforts approach the IRM objective at the HQDA level. Therefore, the focus of the design effort is to provide a coordinated and comprehensive design for the IRM process such that, when established, it can lead HQDA to achieving the overall IRM objective.

3. THE DESIGN PREMISES

The identification of the design premises is the third topic of the design framework. These premises must be defined explicitly and consistently because they provide the criteria for understanding the decisions made in the course of the design. If they are left implicit, or defined inconsistently, then the design features may not necessarily be seen as unified and compatible. The premises of this design effort deal with the following questions:

- How does the design relate to the existing organizational structure and regulations of HQDA?
- How does the design account for the existing IRM related efforts in HQDA?
- How open is this design effort to future refinements and organizational learning?

The design premises, which are the answers to these questions, are described in the following paragraphs.

Design Premise 1. The IRM process will be in compliance with the organization and regulations of HQDA.

The IRM process is one of the several important processes of HQDA that support the mission accomplishment of HQDA elements. The IRM process must be coordinated with other HQDA activities; therefore, it must be compatible with HQDA organizational structure and regulation.

This premise leads to two important design implications. The first involves the fact that the HQDA organization and regulations change in response to changes in the HQDA mission and its environment. Thus, the IRM process must be designed as a flexible process and with the capability for adaptation to these changes.

The second implication is that the design must explicitly describe the interface of the IRM process with the organization and regulations of HQDA. The latter are described well in many other documents. In the interest of economy of presentation, the design will only make reference to them when needed. Some important cases in point are the security regulations, audit policies, and the methodology and regulations for the design and implementation of information systems.

Design Premise 2. The implementation of the design of the IRM process will be evolutionary and, thus, the design will build upon the existing IRM capabilities of HQDA.

This premise has been adopted for two reasons. The first is that the IRM process is a large scale undertaking which involves most elements of HQDA either directly or indirectly. Its implementation requires the cooperation of all those involved, and thus, requires

their learning and acceptance. A revolutionary approach, could have disruptive effects all across HQDA. Also, it will not allow time for IRM concept familiarization and organizational learning. Therefore, an evolutionary approach is preferable as it allows for the gradual propagation of IRM and allows time for the required learning and adjustment on the part of HQDA elements. Also, it will allow the concentration of the scarce resources allocated for implementation on limited areas, one area at a time.

The second reason for this premise is that the existing IRM capabilities of HQDA have consumed considerable investments of money and personnel. Also, they have gone through a trial and error period, have matured to some extent, and the personnel involved with them have been educated in many of the laws, regulations, methodologies, and techniques. By taking the existing IRM capabilities as a starting point for IRM implementation, the investment in these efforts is utilized and the trial and error period for IRM implementation will be shortened.

Design Premise 3. The IRM process design will be refined as HQDA gains a deeper understanding through experience in its implementation.

The present design is a new and comprehensive attempt to manage information in HQDA. It is based on the current level of understanding of the project team and the feedback from the study sponsor and the members of the study advisory group (SAG). As it is inevitable in any large scale undertaking, the IRM process can be expected to go through much change and improvement. It will be further refined as it is circulated among a larger audience in HQDA and their feedback is received. Also, other refinement areas will be highlighted in the source of its implementation which must be dealt with appropriately. The implication of this is that the design, particularly its implementation approach, must be capable of soliciting feedback from knowledgeable sources for identifying the refinement areas. The design must also be flexible to accommodate efficiently the modifications resulting from feedback.

4. THE DESIGN SCOPE

As a key prerequisite to a cohesive and effective design effort, it is important to define the scope of the IRM process design. The design scope is defined by identifying the HQDA information types which are subject to the design. The total HQDA information resource may be categorized by the following four factors:

- Authority for Information Activities
- Information Formality
- Information Classification

. Information Automation.

The following discussion defines these factors, and identifies the information types which at this time are included in the design scope.

(1) Authority for Information Activities

The management of HQDA information resources are to be achieved through conducting the information life cycle activities according to the IRM policies and procedures. The authority for the policies and procedures of the IRM process stems from HQDA. Hence, these policies and procedures shall be applicable only to those information activities which are under HQDA jurisdiction and are carried out by its elements. Thus, the scope of the design includes only those information items which are subject to information activities performed within HQDA and its supporting DPIs.

(2) Information Formality

The HQDA information resources includes both formal and informal information. Formal information is that information which is required to pass the control measures identified in HQDA regulations. It is generally recorded in some medium, such as paper, magnetic tape, microfilm and may be accompanied by the signatures of HQDA officials. Formal information includes the "official" HQDA records and data bases as well as periodic reports.

Informal information is not specifically checked against such control measures. A primary medium for its communication is speech. It may also be recorded as draft papers, notes, computerized working files and local non-shared data bases developed for private use. At this time it does not appear feasible and cost-effective to attempt to manage the informal information resources of HQDA. Therefore, the IRM design scope shall include only the formal information of HQDA.

(3) Information Automation

The formal information of HQDA can be considered as of two types: automated and manual. Automated information is defined as the information where at least one of the steps in the handling phase of its life cycle is taken by utilizing ADP (Automated Data Processing) technologies. Manual information does not pass through an automated step.

In the choice of automated or manual information as the subject of this design effort, the following factors have been considered:

- Automated information is more structured and organized than non-automated information and therefore its management would be more straightforward

- Metadata about automated information is to a large extent available in the design documentation of automated systems and may be readily stored and retrieved by the use of automated data management tools

- A considerable body of techniques and tools have been already developed for managing automated information.

Therefore, the design scope focuses on automated information.

(4) Information Classification

A significant portion of the information resource of HQDA concerns classified material. A substantial security program has been established within HQDA to safeguard this information while permitting its use in the management of the Army. One aspect of this security program is the assignment of levels of security classification to individual pieces of information and the authorization of individual members of HQDA to supply, handle, and use information of a specified level.

In the area of intelligence information (under the purview of ACSI) it has traditionally been recognized that the extremely sensitive nature of certain types of intelligence warrant severe control measures over its collection, processing, communication, and use. Such information is "compartmented" to guarantee its security. In compliance with this important regulation, the scope of the design will exclude compartmented intelligence information.

Thus, the initial scope of the design of the IRM process in HQDA focuses on the information items and activities which are formal, automated, controlled by HQDA, and which exclude compartmented intelligence. The definition of the scope of the design is not seen to be too restrictive:

- The automated formal information types comprise a considerable and significant part of the HQDA information resource. The achievement of the IRM objective for these types could result in substantial benefits for HQDA.

- These information types are typically more organized and standardized. Therefore, they are suitable for the first attempt to design and implement an IRM process for HQDA.

The above definition of design scope is not intended to define the long-term limits of the IRM process in HQDA. For example, it is possible for HQDA to extend the scope of the design at some later time to include:

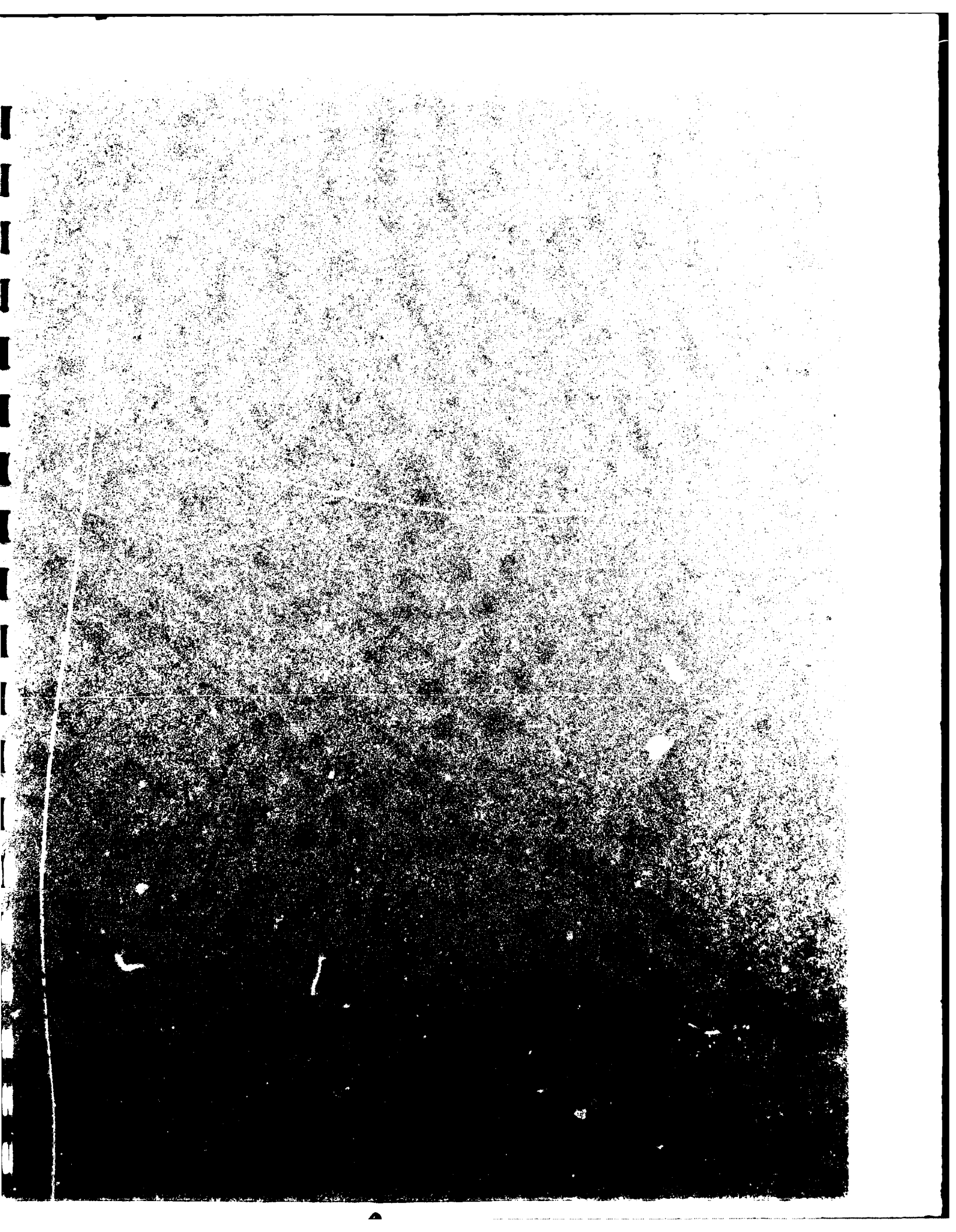
- The information resource of the Army in the field which has a high volume of information exchange with HQDA
- That portion of manual information which can be defined rigorously
- Compartmented intelligence information.

Any such extension desired by HQDA would require design modification. The present design is flexible so that it may be made adaptable to future expansion needs.

5. SUMMARY

In this chapter the design framework of the IRM Process has been established. First the concept of the IRM process was defined to be the coordination of the life cycle phases of information, (i.e., information supply, handling, and use) towards the IRM objective of information cost-effectiveness. Second, the design premises were set to consist of (i) compliance with the existing HQDA organization and regulations, (ii) an evolutionary implementation approach based on HQDA's existing IRM capabilities, and (iii) the gradual maturation of the design as HQDA gains experience in its implementation. Third, the scope of the design was set to be the formal and automated information controlled by HQDA which excludes compartmented intelligence.

The design framework sets the stage for the design which follows. The basic level of the design hierarchy is the fundamental IRM policy concepts which are described in the next chapter. The other levels are the management structure, the functional structure, the IRM information system and the IRM implementation. These levels are described, in turn, in the subsequent chapters.



IV. THE FUNDAMENTAL POLICY CONCEPTS OF IRM

In Chapter III the design framework of the IRM process in HQDA was presented. The next level of the design structure is the fundamental policy concepts of IRM which is described in this chapter.

The fundamental policy concepts are the foundation upon which the remainder of the IRM design is built. They establish the rights and obligations of the suppliers, handlers, users, and managers of the HQDA. The policy concepts are not necessarily new to HQDA. Many of them are already implicitly established in varying degrees of implementation. However, they have not been comprehensively described in a single document and have been subjected to different levels of interpretation. By explicitly stating these concepts, HQDA can remove inconsistencies among interpretations of information policies, provide coordination and guidance for their uniform implementation, and establish a basis for their review and improvement in response to changes in the HQDA information environment.

These fundamental policies, by their nature, are general and have broad sweeping implications, which are discussed in the following chapters. In this chapter, the fundamental policies are presented as policy concepts rather than formal policy statements to facilitate the understanding of the basic ideas. It remains for HQDA to convert these policy concepts into formal Army regulations.

The fundamental policy concepts address three major issues:

- Information ownership
- Information accountability
- Information access vs. confidentiality.

In the following paragraphs we discuss these issues. They have been derived from our Phase I analysis of the information problems which HQDA has experienced and which are summarized in Chapter I of this report.

(1) Information Ownership

The notion of ownership of information implies control over information: its supply, handling, and use. Informally, the ownership of information at HQDA is linked to the element which posseses that information at the moment. Thus, ownership is seen to change as that information passes from one element to the next. Under the IRM approach, the ownership of information is divided

among the three information communities. This implies three aspects to the definition of ownership of information. The user exerts control over the definition of information by setting its attributes and establishing its requirement. The supplier of information controls its availability and quality. The handler of information exerts control over the processing, maintenance, and distribution of information. These three aspects of ownership must be explicity formulated and well defined to avoid confusing overlaps. The management of information as a resource addresses the identification and coordination of these aspects of information ownership.

(2) Information Accountability

With ownership comes responsibility. The cost-effectiveness of information is the shared responsibility of the three information communities and cannot be attributed to any one of them. These responsibilities must be explicitly formulated and well defined so that each community understands its role and obligation. Accountability for information must be established to provide direction and motivation to HQDA elements to meet their responsibilities. The IRM process provides for the formal definition of information management responsiblities and the auditing of their accomplishment.

(3) Information Access vs. Confidentiality

Every HQDA element needs information to achieve its mission. As a member of the HQDA information community each element has the right to expect that the other elements of HQDA will supply the information it needs to perform its tasks. However, each of the supplying elements should have the right to determine who should be granted access to its information in order to avoid misinterpretation or misuse. These two rights--the right to informaiton and the confidentiality right--may come into conflict with each other. If unresolved, the impacts of this conflict on HQDA at large include either information unavailability or excessive reporting burden and redundancy of information collection and processing. The IRM process requires establishing a careful balance between a user's right to information and the supplier's right to confidentiality.

These three major issues of ownership, accountability, and confidentiality are addressed in the nine fundamental policy concepts described in this chapter. For each policy concept there is a detailed description which contains the background, elaboration, and implications of the concept for the next levels of the design. The fundamental policy concepts are grouped in the following four areas which can be seen in Exhibit IV-1:

- Information Management

IRM Fundamental Policy Concepts

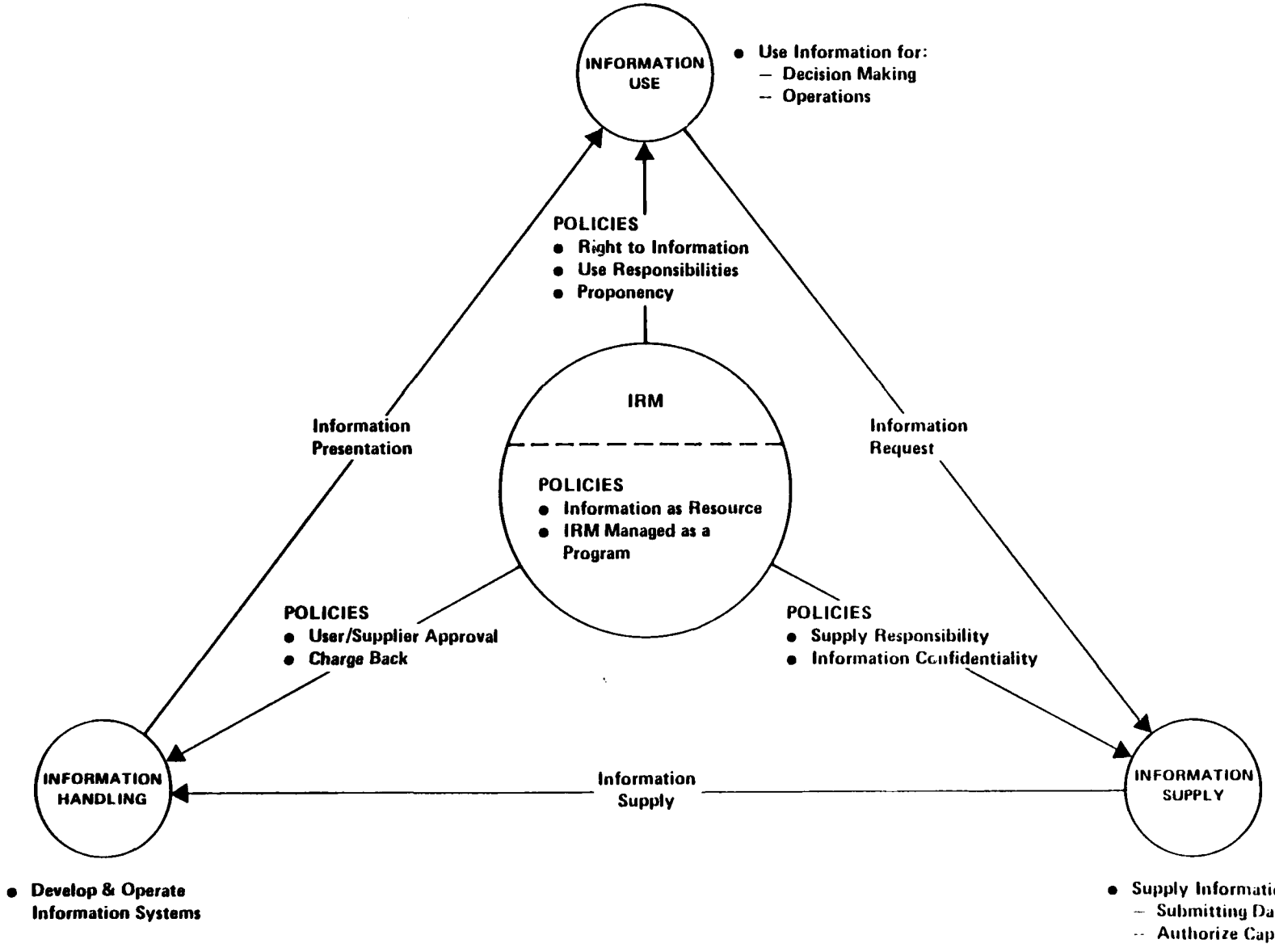


EXHIBIT IV-1

- Information Use
- Information Supply
- Information Handling

1. INFORMATION MANAGEMENT POLICY CONCEPTS

Policy Concept 1. Information is regarded as a significant resource of HQDA. It will be managed to enhance its cost-effectiveness as defined from the overall HQDA perspective.

Information is a significant resource of HQDA, without which the mission of HQDA and its elements cannot be achieved. To acquire and produce its information resource, HQDA devotes a considerable amount of money and personnel to a wide array of information systems and activities. The cost of HQDA resources spent for information is so high and the importance of information to the HQDA mission is so significant that it can no longer be left unmanaged. Therefore, HQDA needs to establish a process for managing its information resource.

There are two major approaches for managing information. They are similar in that their objective is the cost-effectiveness of information, but they differ in their focus. One focuses on singular information systems while the other focuses on the information itself.

The singular information system approach has a system by system focus and is concerned with the cost-effectiveness of single information systems as individualized entities and independent of each other. This approach has two shortcomings from a HQDA-wide perspective:

- It is primarily preoccupied with the handling of information, and thus does not effectively account for the cost and effectiveness of the supply and use phases of information
- It tends to overlook the cost-effectiveness which can be obtained by information sharing among several systems and avoiding unwarranted redundancies.

The other approach is primarily concerned with information. It has a broad view of cost-effectiveness of information which includes:

- The three phases of the information life cycle, i.e., supply, handling, and use
- All the HQDA information systems in the form of an interdependent network and as a system of systems.

This approach is closely related to the "network" concept currently being advocated by ACSAC. It avoids sub-optimization of cost-effectiveness as it is not only concerned with the information systems and other information activities, but it coordinates them to benefit from information sharing and the avoidance of unwarranted redundancies. Of particular importance to IRM is the management of the information within the network as opposed to the management of the network itself.

Policy Concept 2. HQDA will establish an IRM Program to manage its information resource. The IRM Program will be responsible to establish and coordinate the policies and procedures governing all HQDA information activities within the scope of its design. The program authority stems directly from OCSA and will be adhered to by all HQDA elements unless specifically exempted.

As described in the conceptual model of IRM, the management of information is an ongoing and large-scale process encompassing most of HQDA elements. To manage a process of such nature there are generally two approaches: the implicit and the explicit approach. The implicit approach to IRM would rely mainly on mutual understanding among the HQDA elements involved in the IRM process for the coordination of their IRM related actions. No single element would have the overall responsibility and authority for achieving the objective of the IRM process. There is no explicit budget defined for the process and its resource expenditure is not controlled.

Adopting an implicit approach to managing the IRM process involves high risk. This is due to the fact that (i) information is a significant resource with a considerable cost and (ii) the implicit approach is not sufficiently controllable and its likelihood of missing the IRM objective would be high. Therefore, there is need for an approach which is more subject to HQDA control and direction. The explicit approach manages the IRM process as an official program with explicitly defined authorities, responsibilities, and budget. Thus, it provides HQDA with control over the IRM process and increases its likelihood of achieving the IRM objective.

The conduct of information activities in HQDA is governed by a set of policies and procedures. The responsibility of the IRM program is to coordinate these policies and procedures, and to develop new ones to ensure that compliance to them would be harmonious and would lead toward the IRM objective. The IRM program will also help HQDA elements comply with IRM policies and procedures by establishing a number of functional programs to formulate detailed policies and procedures, education, services and tools. The establishment of the IRM program and its functional programs will require designing its:

- Management structure
- Tools
- Organizational placement
- Resource plan
- Implementation plan.

The design of these aspects of the IRM process is presented in the remaining chapters of this report.

2. INFORMATION USE POLICY CONCEPTS

The purpose of the information use policy concepts is to define how the elements of HQDA in their use of information will contribute to the achievement of the IRM objective. These information use policy concepts cover three areas:

- The Right to Information
- Information Use Responsibilities
- Information Proponency.

These policy concepts are described below.

(1) The Right to Information

Policy Concept 3. Each HQDA element will have the right to receive the information resource necessary for its mission accomplishment. This information resource is referred to as its Required Information Set (RIS) which will be explicitly defined by the element.

HQDA elements generally have a budget which defines the amount of resources such as money and personnel available to them to achieve their mission. The budget serves not only as a control over expenditure, it establishes the right of access to the allocated resources. In the case of information, similar information resource definition is necessary not only because information is a costly resource, also because the right of HQDA elements to it must be established.

The RIS of a HQDA element can generally be defined through analysis of the element's mission, possible courses of action and other elements with which it interacts. The RIS definition is not intended to be rigid, to limit access to needed information, or to create extra review and approval requirements which would

be cumbersome, time consuming, expensive, and therefore against the IRM objective. It is rather a flexible definition of information requirements which is to be continuously reviewed and modified in the IRM process. It is based on the premise that all HQDA information - within scope of the IRM design and with appropriate security constraints - is to be available to all HQDA elements upon their request. It is, thus, primarily intended for planning purposes and facilitating the availability of information through advance estimation of required resources, information systems and related efforts.

It is recognized that under the dynamic conditions of HQDA, not all information requirements can be defined in advance and in detail. Therefore, the RIS is formulated as a mix of direct and indirect definitions of information requirements. The direct definition identifies the attributes of information requirements which are routine and predictable at an appropriate and practical level of detail. The indirect definition takes the form of a monetary and personnel budget by which the HQDA element will satisfy its non-routine and unpredictable information requirements. The RIS definition, will not only organize the information needs of HQDA elements and highlight the excesses and gaps, it will guide the information suppliers and handlers in their projection, planning and scheduling of supply and handling activities.

To assist the execution of this policy, the IRM program will require at least the following capabilities:

- Information Planning - to assist the definition and refinement of RISs
- Data Standards - as the means for a unified definition of RISs
- Metadata Management - to assist identifying the sources for RIS.

The approval of the RIS of a HQDA element would be according to the prevalent processes for resource allocation and mission definition.

(2) Information Use Responsibility

Policy Concept 4. The users of information will be responsible for the cost-effectiveness of their information requirement definition, access, and use through such measures as information sharing and avoidance of unwarranted redundancies.

The information users are key elements in the management of information because the definition of their information requirements impacts the ability to share information and control redundancy. Therefore, they will be held accountable for contributing to the IRM objective through a number of responsibilities. These responsibilities, which will be met to the extent feasible and justifiable, include:

- Using existing information to avoid redundant information supply and handling costs
- Defining new information such that it can be shared by other HQDA elements
- Making trade-off's among the RIS attributes and its cost. For example, in deciding on the required level of detail or accuracy of information, its cost must be weighed against its benefits and justified
- Updating frequently the RIS definition and deciding on the continuation, modification, or purge of its information items
- Defining the RIS and its changes as far in advance as feasible to allow effective planning and scheduling for handling and supply
- Incurring chargeback for the information services received. There will be an explicit budget item defined for information in the overall budget of the user. The chargeback for information will be against this budget item and it will help to define more effectively the budget requirements of handling and supply. It will also motivate the users to review their RIS definitions rigorously and delete any unnecessary and unjustified information services.

To assist the users in meeting these responsibilities, the IRM Program must provide the following capabilities:

- A metadata management capability to facilitate the use of existing information by making it easy for the user to identify the attributes and location of existing information
- A data standardization capability to standardize the definition and attributes of information items so that they are compatible and consistent as required for information sharing
- An information planning capability to assist the users in defining their RIS in advance

- An information costing methodology for information budgeting and cost identification.

In the next levels of the design, these capabilities will be defined in greater detail.

(3) Information Proponency

Policy Concept 5. Each information item (or group) will have a HQDA element designated as its proponent. The proponent of an information item will be selected from among its user group and will represent the interest of all users in decisions affecting the information item.

An information item typically will have several users who share the rights and responsibilities described in the previous policy concepts. In meeting their responsibilities, their decisions with regard to the information item must be coordinated. For example when a decision is to be made on changing an attribute of the information item, all the users must be consulted to ensure that their interests and requirements are preserved in the change. As a method of coordinating the users, a user element will be designated as the proponent for that information item.

A HQDA element may be the proponent for more than one information item. For example all the information produced by a given information system may have the same proponent. The designation of informaton proponents is a formal process and the proponent's identification will be recorded in the metadata of the information.

The proponent of an information item will be responsible to its users for representing their interests. It will provide a focal point for communication with the handlers and suppliers of the information item. It will also provide the initial budgetary investment for the production of or change in information items for which it is the proponent. Other users will compensate the proponent for this investment through the chargeback mechanism for their use of the information.

3. INFORMATION SUPPLY POLICY CONCEPTS

There are three major questions in the supply of information; namely:

- What are the responsibilities of HQDA elements for the supply of information?
- What is the right of HQDA elements to information confidentiality?

- What is the process of accounting for the resource expenditure in the information supply process?

The information supply policy concepts are formulated in response to these questions and are presented in the following description.

(1) Information Supply Responsibility

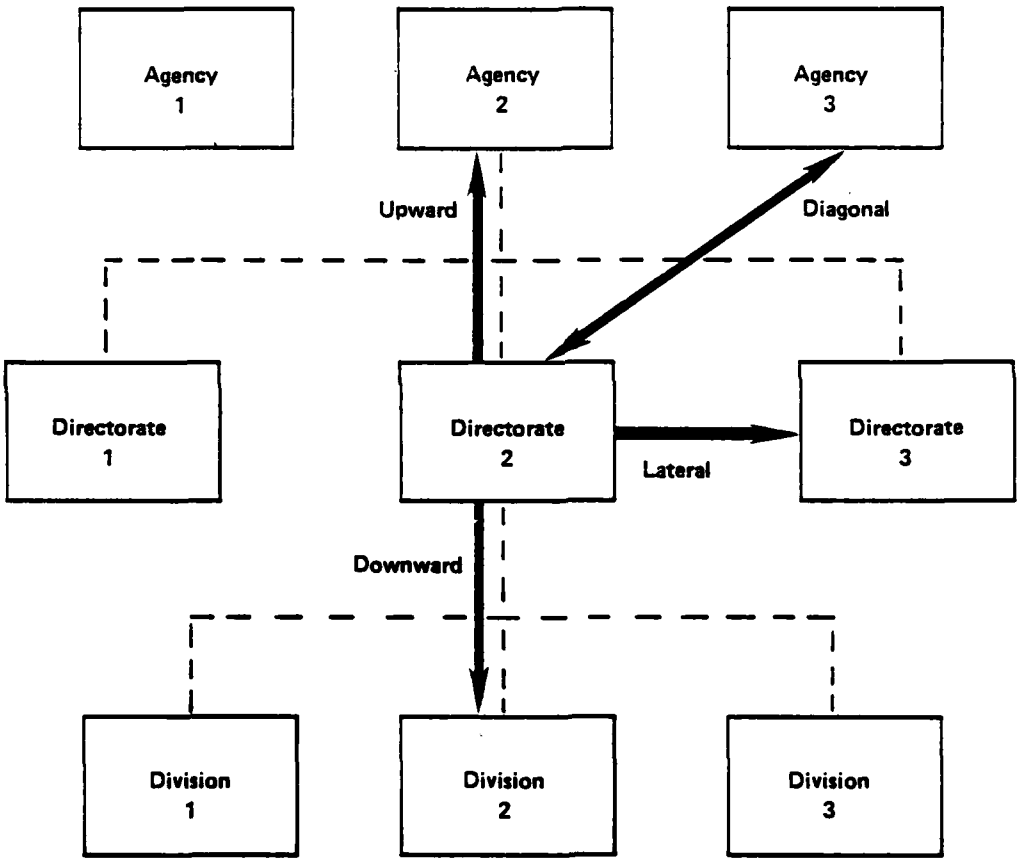
Policy Concept 6. Each information item (or group) will have a HQDA element as its sole competent source responsible for its availability and quality control. All sole competent sources are responsible to supply information upon request of other HQDA elements, according to a release schedule.

In order to define the information supply responsibilities, it is first necessary to review the types of information supply channels in HQDA. The supply of information is performed as a multidirectional process in four major directions: upwards, downwards, lateral, and diagonal as presented in Exhibit IV-2. In the upward direction, a HQDA element supplies information to its direct superior. In the downward direction, a HQDA element supplies information to its direct subordinates. The lateral supply of information is among the elements which are subordinate to the same element and are at the same organizational level. The diagonal supply of information occurs among elements with different superior elements and not necessarily at the same organizational levels.

The specific responsibilities of HQDA elements for information supply in these four directions is generally specified in advance as part of the mission definition. Compliance to these responsibilities is expected of each element in the same manner as compliance to other responsibilities. Nevertheless, the dynamic nature of HQDA creates continuously new information needs which are not specified in advance. Thus there is need to define also the general supply responsibilities for dealing with the unpredictable situations. The general supply responsibilities vary according to the supply direction.

In the upward direction, the responsibility of an element is derived from the hierarchy principle which is a primary organizational principle of HQDA. According to this principle, the superior element can request information from its subordinates and set its release schedule. The release schedule establishes the date or dates for the release of information and its intended recipients. After the release date, the supplier is responsible to supply this information in response to requests, unless it is in conflict with HQDA regulations or public law.

An Example of Information Supply Channels



In the downward direction, the superior is responsible for the supply of information to its subordinates on a "need to know" basis. The superior may itself supply the information or arrange for its supply by others.

In the lateral and diagonal supply of information, two primary approaches are possible. One requires seeking the approval of appropriate authorities for release of information on a case-by-case basis. The other allows the supply of information in response to requests through blanket approval by higher level authorities.

The first alternative is generally less efficient than the second one because the additional approval requirements increases the delay, cost, and complexity of the information supply process. It is more efficient to consider all HQDA information as available according to predetermined release schedules to all HQDA elements upon their request unless otherwise specified due to security or confidentiality reasons.

By limiting the need for a case by case approval for information release, however, it is not meant to imply that the supply of information would be unorganized. For efficient and effective information supply there are certain necessary conditions to be met:

- The need of the user to know which element is capable of supplying its desired information
- The need for one HQDA element to be explicity responsible to control the quality of information according to its specifications
- The need for avoidance of discrepancy in information due to several suppliers.

To meet these conditions, each information item will have a HQDA element as its sole competent source which will be responsible for its quality control and supply. The proponent of an information item can also be its sole competent source. The sole competent source of an information item will be indicated in the metadata for assisting the users in locating its source.

The supply of information to users external to HQDA requires coordination by special HQDA elements. These coordinating elements will be designated according to the type of user (e.g., Congress, NATO), the type of information, and other applicable factors.

(2) Right to Information Confidentiality

Policy Concept 7. Each information proponent in conjunction with its sole competent source will have the right to information confidentiality, that is, they may declare all or part of the information under their authority unavailable for supply before a formally specified release date.

The right to information confidentiality stems from the fact that preparing information is generally a lengthy process which could include modifying information several times before it is suitable for release. A premature release of information could lead to inconsistent and inaccurate information, and thus, to erroneous decisions and actions by its users. The right to information confidentiality enables the supplier to declare the information under its control unavailable for supply before the scheduled release date. For example, in the course of preparing its final budget plan, a HQDA element may produce several alternative plans for comparison and subsequent selection of the best plan. Without the right to information confidentiality, information on these alternatives may be prematurely accessed and incorrectly interpreted as the final budget plan of the element.

The right to information confidentiality could come into conflict with the right to information described in the IRM Policy Concept 3. The uncontrolled use of the right to information confidentiality could lead to information hoarding, its unjustified unavailability, and therefore hinder information sharing. The excessive use of the right to information could lead to unjustified cost and burden on information suppliers as well as infringe upon the supplier's right to confidentiality. The primary mechanism to resolve this conflict is the careful setting of information release schedules. Until the scheduled release date, the supplier will not be responsible for the supply of information and its right to confidentiality will be preserved. After the release date, the user can request information according to its right to information and the supplier will be responsible to meet the request as established in the IRM Policy Concept 6.

4. INFORMATION HANDLING POLICY CONCEPTS

The information handling phase of the information life cycle refers to the design, operation, and enhancement of the information flow from its capture, through its processing and finally to its presentation to users. Information handling has traditionally been the subject of HQDA policies and regulations more than the supply and use phases. These policies and regulations are in general conformity

with the objectives of the IRM process and policies presented in this report. As mentioned earlier in the discussion on the premises of the design, the design of the IRM process is according to the existing policies and regulations of HQDA. To avoid redundancy with these regulations we highlight only the following two policy concepts.

Policy Concept 8. The information handlers handle and present information only upon the request and approval of the information proponent and sole competent source.

The responsibilities for decisions defining the information requirements and the use of the right to information confidentiality have been delegated in the previous policy concepts to the information proponents and sole competent sources. The information handlers are responsible to abide by these decisions such that the user's request is met and the supplier's right to information confidentiality is not violated. In order to avoid problems arising from uncoordinated decisions and overlapping authorities, the information handlers will be primarily responsible for handling of information only in response to the decisions and requests of information proponents and sole competent sources. The contribution of information handlers to the IRM objective, then, will be through the cost-effective management of the handling activities, that is, during the information system life cycle. In defining the handling cost-effectiveness, the HQDA information systems will be viewed as an interdependent network, and thus the benefits of sharing, economy of scale, and redundancy control will be sought.

Policy Concept 9. The information handling budget will be determined based on the use of the information handling services. The share of each user in information handling costs will correspond to the cost of the information services it uses.

As a general requirement the resources allocted for information handling (e.g., personnel, financial, and equipment resources) must be appropriate for the quality and amount of information services requested by the users. Otherwise, if the allocated resource is too high, cost inefficiency will result and if it is too low, the requested services cannot be provided. This requirement is not generally met by the conventional approach of allocating an overall amount of resources to information handling centers. This conventional approach also lacks the flexibility needed for adapting to the changes in the requests of the users. As a result, the information handling centers could be over- or under-budgeted.

An alternative approach is that the required budget for a particular service be justified by the use of that service and for the period the service is being used. The primary benefits of this approach are:

- The resources of an information handling center tend to correspond more closely with the services requested by the users.

- It is possible to compare the cost of information systems and their products within and among information handling services. This would increase control over cost-efficiency of information systems and motivate those responsible for information handling to be cost conscious.

- The allocated resource and the expenditure cost of handling information changes with the changes in the demand for information handling services. This contributes to the cost-effectiveness of information handling as the over-budgeting and under-budgeting instances tend to be reduced.

- The user's involvement in and responsibility for contributing to the determination of the budget of an information service would add to the control over the usefulness of the service and lead to the discontinuation of those services which are no longer justified.

5. SUMMARY

In this chapter the fundamental IRM policy concepts have been presented. These policy concepts set the foundation on which the rest of the design is developed. The fundamental policies have been formulated to establish the following concepts:

- Information Management
  - Information is a valuable resource to be managed
  - The IRM program will be established to manage information through coordinating the supply, handling and use of information
- Information Use
  - The right to information
  - Information use responsibilities
  - Information proponency
- Information Supply
  - The responsibility of information sole competent sources to supply information to all HQDA elements except in predetermined cases

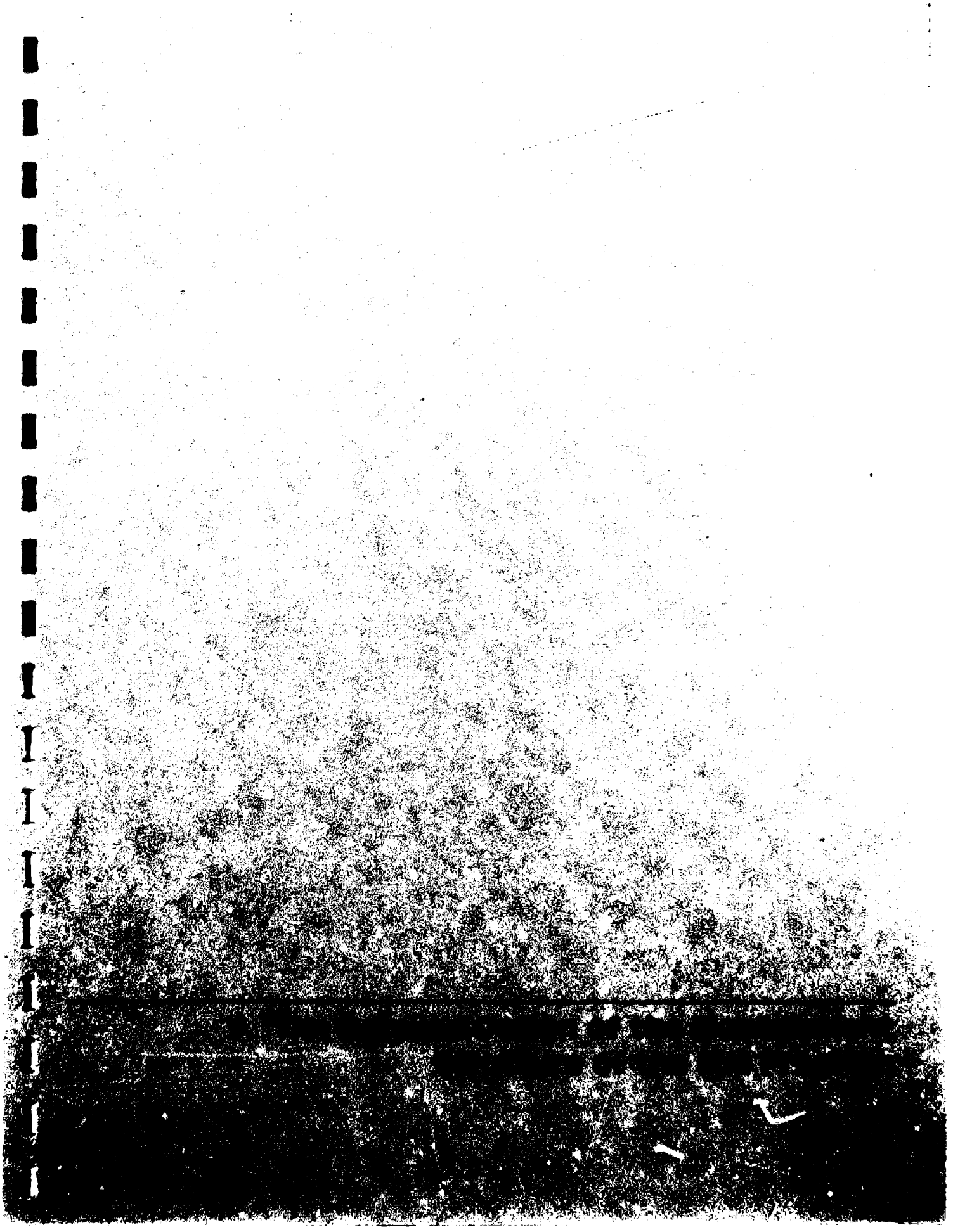
- Authority for information confidentiality

. Information Handling

- Information handling conducted only on the behalf and upon approval of users and suppliers

- The chargeback for information cost to users.

In the next chapter, based on these fundamental policy concepts, the design of the management structures of the IRM program is presented.



V. THE DETAILED DESIGN OF THE MANAGEMENT STRUCTURE OF THE IRM PROGRAM

In IRM Policy Concept 2 of the preceding chapter, it was stated that the IRM process will be managed as a program which will be responsible for coordinating the IRM activities and the policies governing the supply, handling, and use of information in HQDA. The execution of this policy requires the detailed design of the IRM program which would address the following key questions:

- How is the IRM program managed?
- How are the IRM functions managed?
- How is the IRM program implemented?

This chapter, in response to the first question, describes the detailed design of the IRM Program Management structure. The next two questions are the subject of the following chapters.

The objective of the management structure of the IRM program is to coordinate the IRM policies and functions towards achieving the IRM objective, i.e., the cost-effective management of information through its supply, handling, and use. The performance of the IRM program is greatly affected by the degree of the adaptation of the program to its environment. The IRM program environment is characterized as being dynamic and complex. As a result, it places three requirements on the design of the IRM program management structure. The first requirement is a sensitivity to environmental changes and their trend. The areas of change include:

- The mission of HQDA, its policies and regulations, and its programs and processes
- The Public Laws which affect the supply, handling, and use of information by individuals and organizations. Two examples are The Freedom of Information Act and the Privacy Act
- The Field Army as well as other military, Congressional, Federal, and private organizations
- The state of information technology for the supply, handling and use of information.

The second requirement is the capacity of the program management structure to formulate the appropriate adaptive responses to changes in the environment. The third requirement is the flexibility of the program management structure and its functions for efficient implementation of these responses. To meet these requirements, the program management structure is designed to consist of the following five activity modules:

- Program Oversight
- Program Administration
- Execution Feedback
- IRM Policy Audit
- IRM Support Functions

In Exhibit V-1 these activity modules and their relations are graphically presented and in the following discussion, they are described in detail.

1. PROGRAM OVERSIGHT

(1) Policy Concept

The management structure of the IRM Program will include program oversight activity to provide the program with general guidance, to monitor its cost-effectiveness, and to decide on its continuation, modification, or termination.

(2) Procedural Activities

More specifically, the program oversight will perform the following activities:

- Provide general guidance to the program administration (IRMA) on the overall objective and periodic goals of the program
- Review and approve the proposal of the IRMA on the following:
  - Program objectives and periodic goals
  - The plan of the program for achieving its goals
  - The program annual budget for financial and other resources
  - Major changes in the program design; namely, its fundamental policies, management structure, support functions, and organizational placement.

IRM Program Management Structure

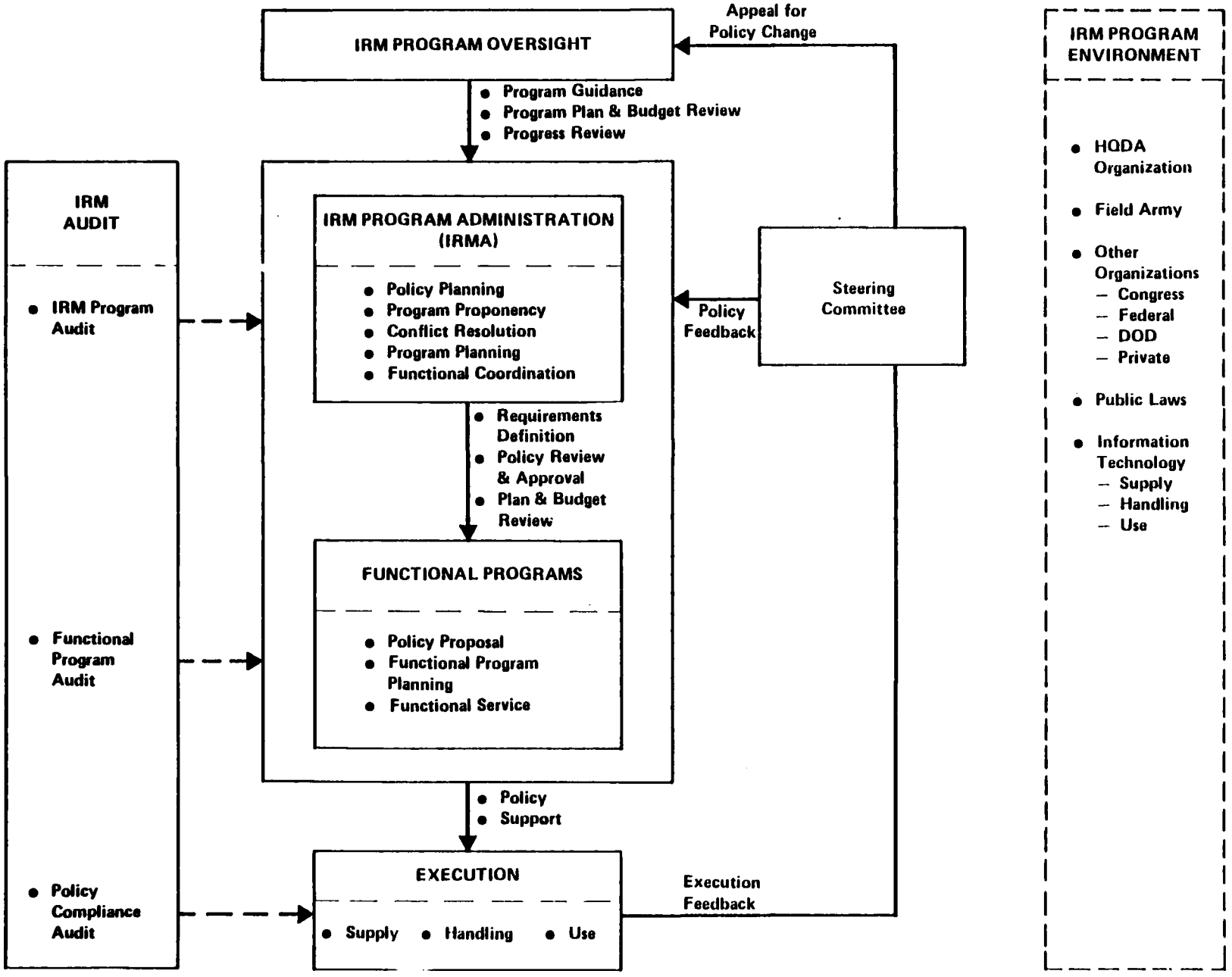


EXHIBIT V-1

The criteria for the review and approval of the above proposals include: (i) their feasibility and cost-effectiveness for achieving the IRM objective in the prevelant conditions of the program environment, and (ii) the priority of the IRM program relative to other functions of HQDA.

- Periodically review the program's progress toward its planned goals. The performance gaps of the program are to be analyzed to identify the required corrective changes in the program.

- Review the major conflicts of the program and its policies with (i) other HQDA activities and regulations (ii) military organizations and regulations external to HQDA and (iii) other Federal and private organizations and public laws. Proposals for dealing with the conflict areas are to be prepared for the approval of CSA, as is the outcome of this review.

The authority and responsibility for oversight activity is delegated directly by CSA. The HQDA elements who conduct this activity will be at senior levels and are directly responsible to CSA.

2. IRM PROGRAM ADMINISTRATION

(1) Policy Concepts

The management structure of the IRM program will include a program administration element to achieve the IRM objective and periodic goals according to its approved plans. It will have an inter-agency perspective and will focus on information as a resource from the HQDA standpoint.

The IRM program administration will be the responsibility of an element called the IRM Administrator (IRMA). This element will have adequate budget and staff to carry out its responsibility.

The authority of IRMA is defined by the Program Oversight Committee to which IRMA is directly responsible.

(2) Procedural Activities

The activities of the program administration and the IRMA are in the following categories:

- IRM Policy Planning

- IRM Conflict Resolution

- IRM Program Proponency
- Functional Programs Coordination
- IRM Program Planning and Review

The details of these categories are described as follows:

(a) IRM Policy Planning

The IRM policies define the way the information activities (i.e., information supply, handling, and use) and information management are to be conducted to achieve the IRM objective. In doing so, the policies describe the authorities and responsibilities of HQDA elements involved in information activities.

The information activities are both interrelated and affected by factors external to HQDA. Thus, their defining policies must be coordinated with each other and with the policies, regulations, and with laws defined by other organizations to which HQDA must comply. An important aspect of this coordination is compliance with the HQDA security regulations. In planning the IRM policies, IRMA will foster the awareness of information security regulations and encourage compliance to them in information activities.

The establishment of IRM policies will be accomplished through the normal HQDA process of suggestion, proposal, review, concurrence, and approval. The policies cross HQDA agency boundaries and will be complied with by all HQDA elements.

To provide the necessary flexibility in adherence to IRM policies, exemptions from them may be requested from IRMA. The justification for exemption include such considerations as:

- Cost
- Security
- Feasibility.

The IRM policies are defined and promulgated by IRMA. A policy could be vetoed by the Oversight Committee, and they may request the IRMA to change certain policies.

(b) IRM Conflict Resolution

IRM conflicts could arise internally or externally. The internal conflicts are those which occur among HQDA elements

in their compliance to IRM policies or those which arise between the IRM policies and other HQDA policies and regulations. The external conflicts are among the IRM policies of HQDA and the applicable policies, regulations, and laws developed by other organizations external to HQDA.

The IRMA will monitor the internal and external policies and their development to identify potential or existing conflict areas. It will deal with conflicts by (i) actively representing the interests of the IRM program of HQDA during the development process of other policies and (ii) defining new IRM policies or modifying existing IRM policies. It will also establish channels through which HQDA elements can inform IRMA of their conflicts and ask for arbitration.

(c) IRM Program Proponency

The IRMA will act as the proponent of the IRM program in HQDA. To do so, it will perform the following activities:

- IRMA will represent the IRM program in the decision-making processes of HQDA
- IRMA will be the HQDA advocate for the IRM concept, adequate funding, and related studies
- IRMA will be the main and central point of contact of the program with HQDA elements
- IRMA will represent HQDA in the larger IRM community existing in military, Federal, and private organizations.

(d) Functional Programs Coordination

The IRM program will perform certain functions which are needed to (i) support the execution of the IRM policies in supply, handling, and use of information, and (ii) to provide services to HQDA elements. The services have an information, rather than systems, focus and cross the boundaries of singular information systems and staff agencies. Examples of these functions are education of HQDA elements on IRM concepts, preparing an overall information plan for HQDA, and providing a HQDA element with data on the attributes and location of a needed information item (metadata). These support and service activities are referred to as IRM functions.

The management of the functional programs will have a distributed approach. In this approach, which is a hybrid of the classical centralized and decentralized approaches, each function will manage itself, but will be coordinated

by IRMA with other IRM functions. The reason for the selection of the distributed approach include:

- A centralized approach would concentrate all management activities in the IRMA. This might be interpreted as establishing an "Information Czar" which could result in delays in decision making and considerable organizational distance between the management point and the execution level.

- A decentralized approach could result in a lack of coordination among IRM functions, thus, leading to conflicts among functions, functional redundancy, or not achieving the synergy of sharing.

- The distributed approach is intended to avoid the disadvantages of the above two approaches and to incorporate their advantages. The distributed approach places responsiblity and authority at the level necessary to accomplish the task. The distributed approach will provide the coordinated flexibility which is needed to change, create, or purge functions in response to the changes in the requirements and the environment of the IRM program.

More specifically, the characteristics of the distributed management of IRM functions are the following:

- Each function will be managed as a program, or program equivalent, within HQDA and will have its own management body and resources.

- Each functional program will be responsible to provide functional services:

- Each functional program will have authority over its resources to meet its responsibility. It will prepare policy proposals within its scope for coordination and approval by the IRMA.

- Each functional program will prepare an annual plan composed of its annual goal, budget request, and planned activities for approval through the normal planning and budgeting process of HQDA.

The IRMA will coordinate the functional programs through the following activities:

- Identify and define the scope of the functional programs.

- Review and approve the policies of the functional programs after their coordination with other policies and their justification in terms of their contribution to the IRM objective

- Review the functional program plan and budget request and give comments for consideration in the review and approval of the budget of the functional program in the budgetary process of HQDA

- Perform management reviews of the HQDA elements responsible for the functional programs and their performance according to the scope and policies set by IRMA.

The initial set of functional programs include the following:

- Information Planning
- Information Systems Coordination
- Metadata Management
- Data Standards
- Data Base Administration
- IRM Technology Assessment
- Reports Management
- Forms Management
- Records Management
- IRM Education

These functional programs are described individually in the next chapter of this report.

(e) IRM Program Planning and Review

The subject of this activity category is the IRM program itself. The IRMA, as the administrative element of the program, will perform the following activities:

- Prepare the annual IRM program plan composed of the annual goal, the method of approach, and the resource and budget request. The program plan will be reviewed and approved in the oversight activity. The criteria for approval include its level of coordination with other HQDA activities, its expected contributions to the IRM objective, its anticipated costs, and its compliance with the guidance given by the Oversight Committee.

- Identify the need and prepare proposals for changes in the management structure of the program relative to the changes in the requirements for the IRM program

and in its environment. These proposals are submitted to the Oversight Committee for review and approval.

- Review annually the performance of the program and its progress. As part of this review, the shortcomings will be analyzed to identify their causes and to propose solutions. The results of the program performance review will be reported annually to the Oversight Committee.

3. IRM AUDIT

(1) Policy Concept

The management structure of the program will include IRM audit activity according to the prevalent audit regulations of HQDA to audit the IRM program, its functional programs, and compliance to its policies and procedures by suppliers, handlers, and users of information in all HQDA elements.

The development and promulgation of information management policy establishes a need to audit individual Staff Agencies, DPI's, and information systems for compliance with the policies, procedures, and standards regarding information management. Such an audit activity not only supplies management with information concerning violations of the IRM policies but provides an incentive for system developers to design compliance into their systems.

(2) Procedural Activities

The IRM audit is conducted in three major areas:

- Policy Compliance

  In this area, the compliance of HQDA elements to IRM policies is reviewed and non-compliance cases are reported.

- IRM Program

  In this area, the performance of the program against its plan and the relevant HQDA policies are reviewed and the cases of non-compliance are reported.

- IRM Functional Programs

  In this area, the performance of the functional programs against its plan and other relevant HQDA policies are reviewed and the cases of non-compliance are reported.

The audit procedures in these areas are the prevalent general procedures of HQDA for auditing policy compliance and programs. The auditors will require sufficient technical skills and information resource management training to be able to determine policy compliance effectively. The audit reports are submitted to CSA, the Program Oversight Committee, IRMA, and the management of each IRM functional program.

4. THE IRM STEERING COMMITTEE

(1) Policy Concept

The management structure of the IRM program will include a Steering Committee to provide policy feedback to IRMA on behalf of the information supplier, handler, and user communities.

In the IRM administration activities, particularly policy setting and program planning, the input of the suppliers, handlers, and users of information is a significant factor. This input will provide IRMA with problem areas and suggested solutions from those who are responsible for the execution of the IRM policies. Thus, it will help IRMA to be more responsive to the needs of the suppliers, handlers, and users of information.

(2) Procedural Activities

The mechanisms for the feedback will be composed of the representatives of the information suppliers, handlers, and users. The IRM Steering Committee will perform the following activities:

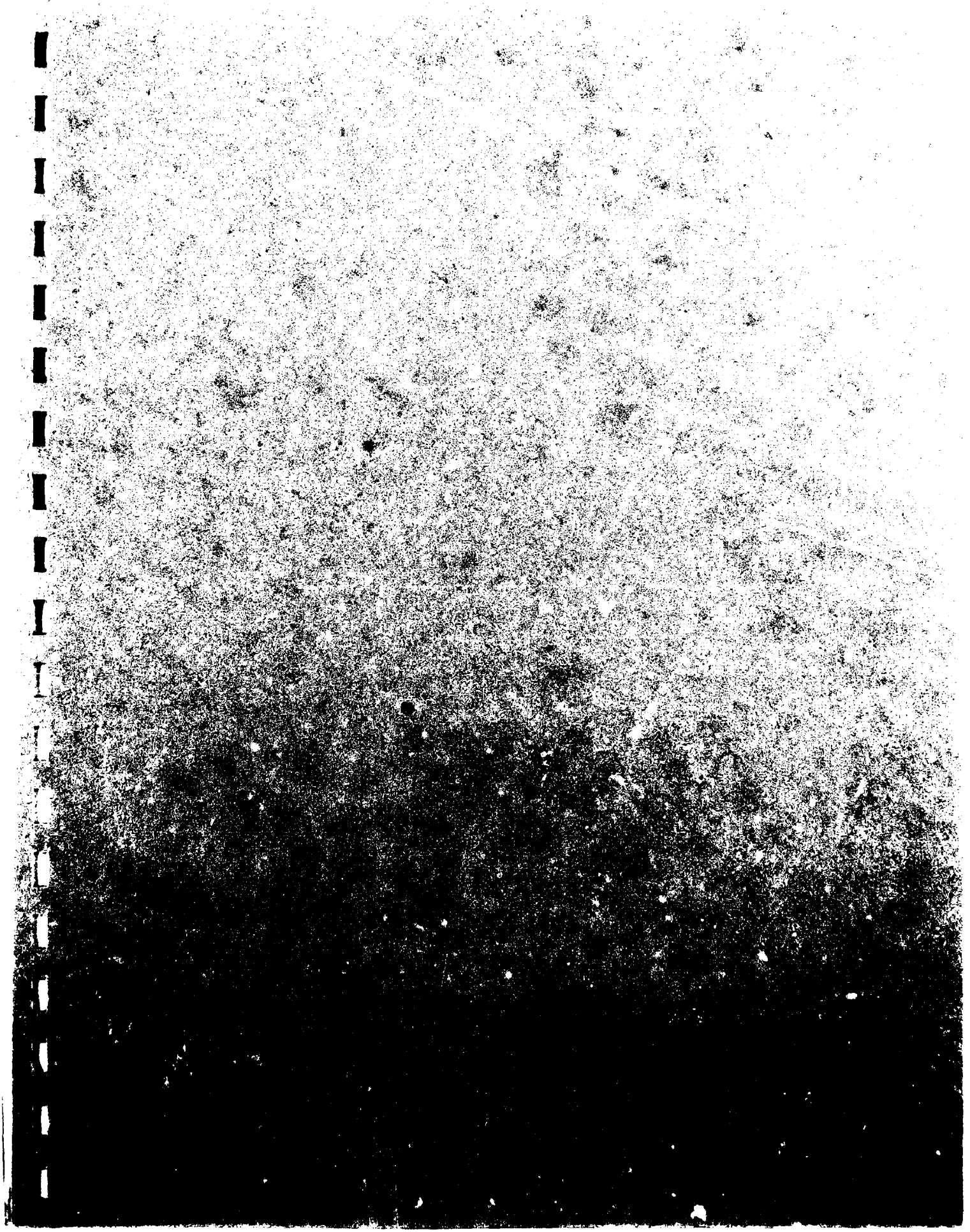
- Elicit IRM Supplier, User, and Handling Community opinions on IRM related matters
- Suggest requirements for new IRM policies
- Propose feasibility studies for application of IRM technologies
- Foster DA and DoD-wide interest in the HQDA IRM program through ongoing attention to program concerns
- Prepare Supplier, User, and Handler Community positions with respect to IRM policy actions for submission to the IRM Oversight Committee
- Provide a channel for an appeals process to be used by HQDA elements for changing IRM policies if required.

5. SUMMARY

In this chapter, the design of the management structure of the IRM program has been presented. The objective of the management structure has been defined to achieve the IRM objective (information cost effectiveness) through five management activity modules which are:

- Program oversight
- Program administration
- Execution feedback
- IRM audit
- IRM functional programs.

The policy concepts and procedural activities for the first four modules, as well as the management of the functional programs, have been described in this chapter. The detailed description of each IRM functional program is the subject of the next chapter.



VI. THE DETAILED DESIGN OF THE IRM FUNCTIONAL PROGRAMS

In the previous chapter we have described the design of the IRM Program Management Structure to consist of five activity modules: Oversight; Administration; Execution Feedback; IRM Audit; and IRM Functional Programs. The first four modules were described in Chapter V. In this chapter, the detailed design of the IRM Functional Programs is described.

The primary objective of the functional programs is to provide support to the HQDA information communities in the management and execution of IRM policies which are part of the overall IRM program. As described in the design of the Program Management Structure in Chapter V, these programs are managed in a distributed structure. The primary characteristics of this structure are as follows:

- The IRMA defines the objective and scope of each functional program to provide a particular type of IRM support.
- Each functional program will have its own management and technical components. It will prepare policy proposals which will go into effect after coordination and approval by the IRMA. The IRMA will establish overall IRM policies and guidelines for functional program policy development.
- Each functional program will prepare a program plan comprised of its annual goal, implementation approach, and resource and budget requirements, which will be reviewed by the IRMA and subsequently reviewed and approved according to the normal HQDA budgetary and planning processes.

The functional programs, in essence, will manage themselves within the HQDA organizational structure, but will be coordinated by the IRMA. As the need for IRM functional support changes, the requirements for each functional program will be monitored by HQDA with the possibility of establishing new IRM functional programs or modifying the existing ones.

As conceived at this time, the IRM functional programs are the following:

- Information Planning
- Information Systems Coordination
- IRM Technology Assessment

- IRM Education
- Data Standards
- Data Base Administration
- Metadata Management
- Records Management
- Forms Management
- Reports Management

The remainder of this chapter discusses the detailed design of each IRM functional program in terms of the policies and procedural activities necessary for its implementation.

1. FUNCTIONAL PROGRAM FOR INFORMATION PLANNING

Managing information as a resource in HQDA necessitates planning for the information needs of HQDA elements. Currently, HQDA information planning is conducted in the requirements analysis phase of specialized applications in a disjointed manner. This approach to information planning has two major problems. First, information planning is limited to the scope of individualized applications and rarely addresses the whole spectrum of the information needs of the user. Second, information plans are uncoordinated. Therefore, even though each plan may be cost-effective within its boundaries, as a whole they may be too costly and ineffective relative to the total needs of the user community and HQDA. Since there is no coordinated information planning methodology at HQDA, there is need to develop an information planning program. The focus of the information planning is primarily the information itself and not the information system(s) producing that information.

This program would produce such benefits as:

- Defining information items such that they are compatible and synchronized relative to users' needs.
- Rationalizing the definition and choice of applications and their information systems development. This benefit would be achieved as the users' information needs are reviewed and prioritized, as a whole and relative to other users. The application areas would be defined such that system development resources would be allocated to satisfy the most important information needs.
- The cost of information related activities would be reduced due to sharing and decreasing unwarranted redundancies.

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THE DESIGN OF AN INFORMATION MANAGEMENT PROGRAM FOR HEADQUARTER--ETC(U)
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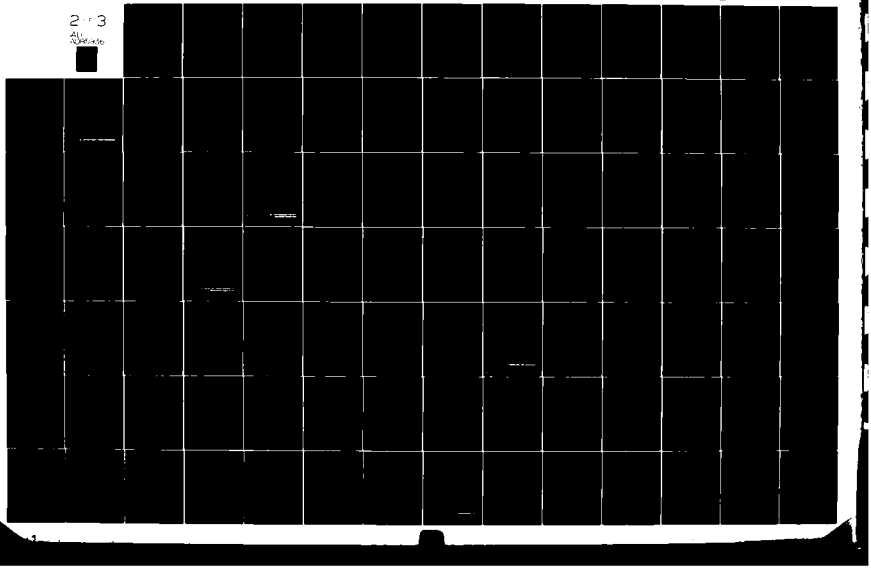

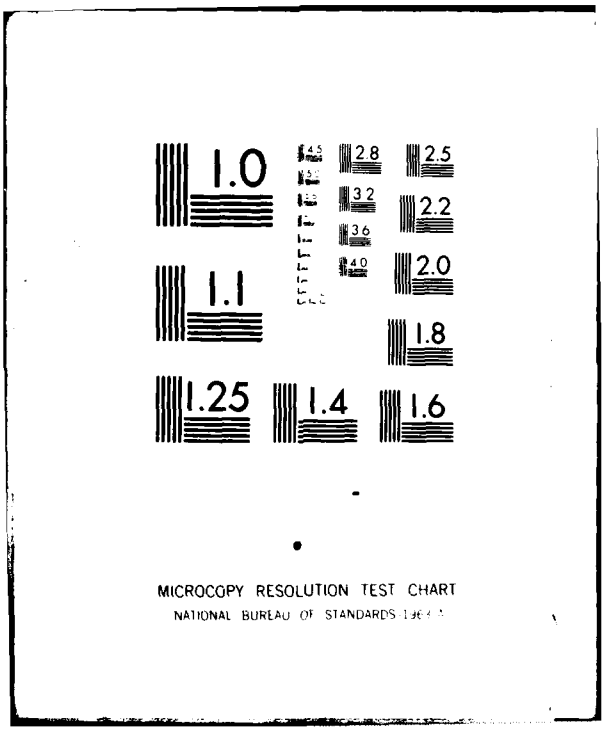
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS

(1) Policy Concept

HQDA will establish an Information Planning Program to define the Required Information Set (RIS) of HQDA elements and to define or develop:

- The shortfalls of HQDA elements in meeting their information needs
- A time-phased plan for alleviating those information shortfalls
- Problems encountered in attempted information sharing
- The costs associated with acquiring, processing, transmitting, and presenting the RISs.
- Procedures for specifying information security requirements as an integral aspect of information plans.

The definition of RIS will be through the specification of its metadata. As the mission of elements and their environment change, their RIS will change. As this change is not always predictable, RISs will be defined in varying degrees of detail depending on the case of each element. The metadata specified in the information planning process will be submitted to the metadata management functional program for storage and retrieval. The details of this functional program are described later in this chapter.

(2) Procedural Activities

- The functional program management will develop methodologies and standards for information planning.
- Each Staff Agency will prepare an information plan in support of agency application/system development efforts. The agency information plans will be updated annually and forwarded to the HQDA IRMA for review and consolidation into a HQDA Information Plan.
- The IRMA will provide Staff Agencies guidance and direction for agency information plan development, coordinate and consolidate a single summary HQDA Information Plan based upon individual Staff Agency Information Plans, and prepare and submit the HQDA Information Plan to CSA and IRM Oversight activity for approval.

2. FUNCTIONAL PROGRAM FOR INFORMATION SYSTEMS COORDINATION

HQDA will need to address the review and coordination of plans for developing major information systems. This effort would include the overall coordination of information system plans, consideration of the use of existing or alternate data sources, evaluation of the potential for consolidation of data or function, and a HQDA-wide perspective for information acquisition and sharing.

The actual development of the information systems would remain in the purview of the individual Staff Agencies and their respective DPI's. Further, it is understood that other forms of review of these plans (such as for ADPE to be involved, soundness of the system design, justification of the need for the system, consideration of Life Cycle Management guidelines, etc.) are highly important, currently being performed, and will continue to be needed in addition to the information review. The coordination of the development of major information systems for the various Staff Agencies is important to the enhancement of information sharing and to the identification of potentially redundant situations.

(1) Policy Concept

HQDA will establish an Information Systems Coordination program to coordinate the major HQDA information systems in their life cycle phases by ensuring the periodic review of major individual information systems plans for overall compliance with the IRM objective.

(2) Procedural Activities

- Each Staff Agency shall develop information systems plans to coordinate all system development activities in the agency and will incorporate IRM concepts and policies into the AMIS life cycle.

- Each Staff Agency shall direct the analysis, design, development, programming, testing, implementation, and maintenance of local information systems in accordance with established HQDA, IRM policies, standards, and guidelines, and in keeping with their information system plan.

3. FUNCTIONAL PROGRAM FOR IRM TECHNOLOGY ASSESSMENT

Information Resource Technology Assessment consists of several efforts which are of a coordinating nature. One is the assessment of current DPI and Staff Agencies' capabilities to support their own information needs as well as the demands of other organizations. The second aspect is the tracking and assessment of current technological trends in information management and assistance and guidance to the Staff Agencies and DPIs in incorporating this technology.

A related function is the assessment of the state-of-the-art outside HQDA with regard to information technology (hardware, software, and information resource management approaches and techniques). The IRM community should work closely with the information resource handling community to keep apprised of technology and techniques which may be applicable to the HQDA environment.

(1) Policy Concept

HQDA will establish an IRM Technology Assessment Program to apprise the overall IRM program and its functional programs of the latest developments in IRM technology, and to identify the IRM research areas of particular interest to HQDA for possible sponsorship.

(2) Procedural Activities

- The IRM technology assessment program management activities include:
  - Develop methodology and standards for IRM technology assessment
  - Coordinate IRM-related research and technology efforts HQDA-wide
  - Prepare an annual IRM Technology Assessment plan and budget
  - Identify common IRM problems of the various Staff Agencies and pursue common technological solutions
  - Encourage the incorporation of new IRM technologies throughout the information communities
  - Conduct an assessment of individual Staff Agencies' level of incorporation of IRM Technology and offer guidance and counseling on needed improvements.
- Each Staff Agency is responsible for being aware of state-of-the-art developments in IRM technology, determining and applying the most cost-effective IRM technology to its information systems design and development, and providing a periodic assessment to the HQDA IRM Technology Assessment Program of its IRM technology needs and capabilities.

4. FUNCTIONAL PROGRAM FOR IRM EDUCATION

This functional program will coordinate the education of HQDA elements on the philosophy and benefits of viewing information as a resource and on what the program is doing to manage that resource. It also includes the education of HQDA personnel on the contents,

location, use, and constraints of the information resource. This function aids the Action Officer in processing his action items, the systems planner and designer in creating new information systems, and HQDA management in planning and budgeting for information.

(1) Policy Concept

HQDA will establish an IRM education program whose objective is to:

- Set HQDA-wide IRM educational objectives
- Review the training requirement of HQDA for IRM
- Establish a HQDA-wide IRM training program (to include courses, texts, lectures, methodologies, and testing procedures)

Each Staff Agency is responsible for obtaining IRM education for its information communities. To do so, the Staff Agency together with its DPI(s) will define its individual IRM educational requirements, budget for the requirements, and provide for its own educational programs in conjunction with the overall HQDA IRM Education Program.

(2) Procedural Activities

The IRM Education Program Manager will:

- Establish a Job Classification and Career Development program for HQDA personnel employed in the IRM field
- Coordinate Staff Agency internal IRM educational efforts
- Periodically report to the HQDA IRM Administrator on the progress and effectiveness of the IRM Education Program
- Sponsor an annual Army-wide conference on Information Management to facilitate an Army-wide understanding of IRM concepts, policies, and problems.

5. FUNCTIONAL PROGRAM FOR DATA STANDARDS

Data standardization deals with the development, maintenance, and enforcement of data element (name) and data item (value) standards for use in information systems. The implementation of data standards can promote information sharing between systems and among organizations. It can also facilitate the development of new systems or the maintenance of existing systems by establishing common terminology among system designers, developers, users, and maintainers.

There is a need to incorporate into the HQDA automated information resource management program the encouragement and coordination of the development and maintenance of data standards for use in HQDA automated systems. The initial scope of this program is limited to HQDA and its supporting DPIs, and thus HQDA will need to work closely with current DA data standardization efforts without necessarily incorporating those ongoing activities. As the scope of the information resource is expanded, the HQDA data standards program may merge with the DA data standards program. A key objective will be to maintain compatibility among the functional programs.

(1) Policy Concept

HQDA will employ a data standards program to foster the development of HQDA-wide guidelines and standards for data/information definition, through the coordination of data standards developed by the information communities of HQDA.

(2) Procedural Activities

. The functional program activities include:

- Determine need for data standards in systems
- Determine requirements for data interchange
- Document and submit new data elements for standardization
- Develop installation plans and schedule for data standards
- Time-phase the installation of data standards
- Incorporate external HQDA data standards
- Develop and install standard metadata definitions.

. The program will coordinate data standardization efforts through facilitating interaction and communication among Staff Agencies by designation of standards representatives for each Staff Agency, reviewing individual Agency Standards and by identifying:

- Opportunities for HQDA-wide guidelines and standards
- Interface and conversion issues
- Areas where HQDA-wide standards are not feasible.

. Each Staff Agency will be responsible for:

- Incorporating standard data elements and codes in any new information system or in any major revisions to existing information systems, where possible

- Actively identifying and submitting candidate data elements and codes to the central HQDA data standards organization for consideration

- Periodically reviewing their information systems and information products for compliance with the HQDA Data Standards Program

- Setting their own local information guidelines where standards do not exist.

6. FUNCTIONAL PROGRAM FOR DATA BASE ADMINISTRATION

This functional program concerns the development and enforcement of policies relating to data base management, and the education and training of the User Community on the contents and access procedures of the individual data bases. Data base administration actually focuses on policy and user interface, but it is also concerned with the more technical aspects of data base design, the development of computer programs to access the data base, and the maintenance of data element definitions and data base structural relationships.

(1) Policy Concept

HQDA will establish a Data Base Administration program to develop and coordinate all the technical and management activities required for organizing, maintaining, and directing the data base environment.

(2) Procedural Activities

. The Data Base Administration program activities include:

- Interpret IRM program policies for data base users and handlers

- Act as liaison among users, handlers, and management

- Evaluate and select data base management system (DBMS) packages

- Monitor and evaluate DBMS performance

- Provide for integrity (quality assurance) and security of HQDA data bases

- Enforce policies and procedures for HQDA data bases.

- Each Staff Agency will be responsible to perform the following activities:

  - Provide liaison with internal and external users and handlers of information

  - Adhere to data element standards, where possible, in its information system development and actively promote candidates for standardizatic·

  - Provide training for its technical staff in data base design, implementation, integrity, control, operation, and maintenance; data management software application; and data management principles and concepts

  - Create a focus on data and information (in addition to the current system focus) for data base and non-data base applications alike

7. FUNCTIONAL PROGRAM FOR METADATA MANAGEMENT

Metadata Management is the management of data about data (metadata) contained in the information resource. Metadata management is concerned with such issues as the name of a data element, its location, its definition, a list of its permissible users, a list of the information systems which access this element, the sole competent source of the information, the proponent responsible for its definition, etc. This metadata can be maintained in a metadata base called an Information Resource Directory.

The management of metadata would occur at several levels throughout HQDA. The current trend toward developing data dictionaries in the various Staff Agencies and DPIs points out the need for a metadata management function in each organization. This function, while based in the technological issues of creating a working data dictionary, will also need to stress user involvement in the selection and definition of terms. The maintenance of metadata in a functional area will be an ongoing process as new needs are identified, new elements defined, and existing elements modified or deleted. The individual data dictionaries for the functional areas can become the central point of definition for the portion of the information resource in the domain of each Staff Agency.

(1) Policy Concept

HQDA will establish a Metadata Management Program to assist the HQDA information communities in developing, collecting, and maintaining metadata about the information resource in order to support improved management and use of its automated information resource.

(2) Procedural Activities

- The Metadata Management Program will develop standards and guidelines for identifying and describing metadata. These standards and guidelines will be comprehensively defined and shall conform to applicable Federal, DOD, and DA standards. All metadata standards and guidelines, and changes thereto, will be approved for use by the HQDA Metadata Management Program.

- The HQDA IRM Administrator will be the proponent for the development of the Information Resource Information System (IRIS) required to support the HQDA IRM Program. The IRIS will provide service to the IRM community in program progress tracking, service to the Handling Community in support of information systems life cycle development, and service to the User and Supplier Communities in support of locating information and coordinating definitions.

- The IRIS will consist of, at a minimum, the following set of tools which are defined in another chapter of this report:

  - Information Resource Locator System
  - Information Resource Directory (IRD)
  - Information Exchange Standards
  - Forms, Records, Reports Data Bases
  - Information Plans
  - IRM Policy Compliance Reporting Mechanisms.

- The Metadata Management Program will be the proponent for establishing and maintaining a central HQDA Information Resource Directory (IRD) to facilitate the assessment, location, and use of HQDA's automated information resource.

- The HQDA IRD will contain an ordered collection of information entity identifiers and their attributes including those which provide location and interrelationship information for HQDA-wide automated information resources (See Exhibit VI-1).

- The HQDA Metadata Management Program will be responsible for identifying metadata information requirements for the HQDA IRD and will develop reporting requirements and procedures to acquire metadata information in the standard specification. Staff Agencies and their DPIs will be responsible for reporting metadata information, and changes thereto, as required for every automated information element.

Examples of Metadata Attributes for Stages in the Information Life Cycle

CAPTURE	TRANSFER	ENTRY	STORAGE	RETRIEVAL	PROCESSING	PRESENTATION
• Sole Component Source and System • Medium/Format • Responsibility/Authority • Quality Control Procedures • Schedule	• Origin and Destination • Medium/Format • Channels • Responsibility/Authority • Quality Control Procedures • Schedule	• Points • Method • Responsibility/Authority • Quality Control Procedures • Schedule	• Location • Data Base/File • Medium • Key Data Item • Responsibility/Authority • Quality Control Procedures • Schedule	• Programs and Systems • Information Products • Responsibility/Authority • Quality Control Procedures • Schedule	• Procedure • Medium/Format • Responsibility/Authority • Quality Control Procedures • Schedule	• Report Medium and Format • Users • Responsibility/Authority • Quality Control Procedures • Schedule

EXHIBIT VI-1

- The HQDA Metadata Management Program Manager will establish procedures to provide access to the HQDA IRD. Criteria for access will be based on the need to know principle as well as relevant security restrictions.

- Each Staff Agency will be the proponent for establishing and maintaining a local Data Element Dictionary/Directory (DED/D) to facilitate the location and use of the agency's automated information resource.

- The agency DED/D will contain a catalog listing of data elements used by the agency and the associated data element descriptions containing specific identification attributes, including those which provide location and interrelationship information for agency automated information resources.

- The Staff Agency will establish procedures to provide access to its DED/D.

- Each Staff Agency shall provide metadata support by:

  - Keeping an inventory on current data and information resources and capturing new data sources by recording entity attributes

  - Checking entity attribute values for existence, format, and ranges

  - Entering validated entities into the DED/D by adding new data, modifying, or deleting existing information

  - Ensuring the integrity of DED/D contents and identifying entities not having values for certain attributes

  - Providing information about DED/D usage and accounting for entities added, deleted, changed or queried.

8. FUNCTIONAL PROGRAM FOR RECORDS MANAGEMENT

Records management includes the management activities relating to the creation, maintenance, and use of HQDA official records with short or long term significance and use. Where these records are automated, this function comes under the purview of the automated information resource management program.

(1) Policy Concept

HQDA will maintain a Records Management program to coordinate and manage HQDA records, including record standards, storage and retrieval methodologies, and release procedures.

(2) Procedural Activities

- The program will establish methodology and standards for records management by HQDA agencies. The existing methodologies and standards will be reviewed and utilized in this effort.

- The HQDA Records Management Office will establish, use, and see to the maintenance of a HQDA dictionary/directory of HQDA records, their information content, and their disposition for use in the program management process as well as by individual Staff Agencies in program compliance and records use.

- Individual Staff Agencies will maintain a similar capability of the records which they employ in their individual information systems.

9. FUNCTIONAL PROGRAM FOR FORMS MANAGEMENT

Forms Management with regard to HQDA automated information concerns the design and control of the format and content of the medium, such as paper forms or CRT screen forms, which are used as data capture instruments for automated information systems. The management of forms addresses the possible use of alternative forms, the consolidation of existing forms, and the retention or purging of outdated forms.

(1) Policy concept

HQDA will maintain a Forms Management program to coordinate and manage HQDA automated forms, as documented by Army Regulations.

(2) Procedural Activities

- The activities of the program include:

  - Develop inventory of existing forms
  - Monitor and control changes to existing forms
  - Review forms for continued use
  - Monitor and control development of new forms
  - Control forms redundancy
  - Develop and coordinate design of forms
  - Develop forms standards for use by HQDA.

- The Forms Management Program will develop standards and methodologies for forms management. The existing methodology and standards will be utilized in this effort.

- The HQDA Forms Management Program will be the proponent to establish, use, and see to the maintenance of a HQDA dictionary/directory of HQDA forms and their information content for use in the program management process as well as by individual Staff Agencies in program compliance and forms use.

- Individual Staff Agencies will maintain a similar capability of the forms employed in their individual information systems.

10. FUNCTIONAL PROGRAM FOR REPORTS MANAGEMENT

Reports Management involves the management of the format, content and distribution of the medium used for the presentation of the automated information. This function includes tracking the need for continued production of (possibly outdated) reports, coordinating the development of new (possibly redundant) reports, and control over the production of periodic reports.

(1) Policy Concept

HQDA will maintain a Reports Management program to coordinate and manage HQDA-wide reports, their information content and their distribution for use in the program management process.

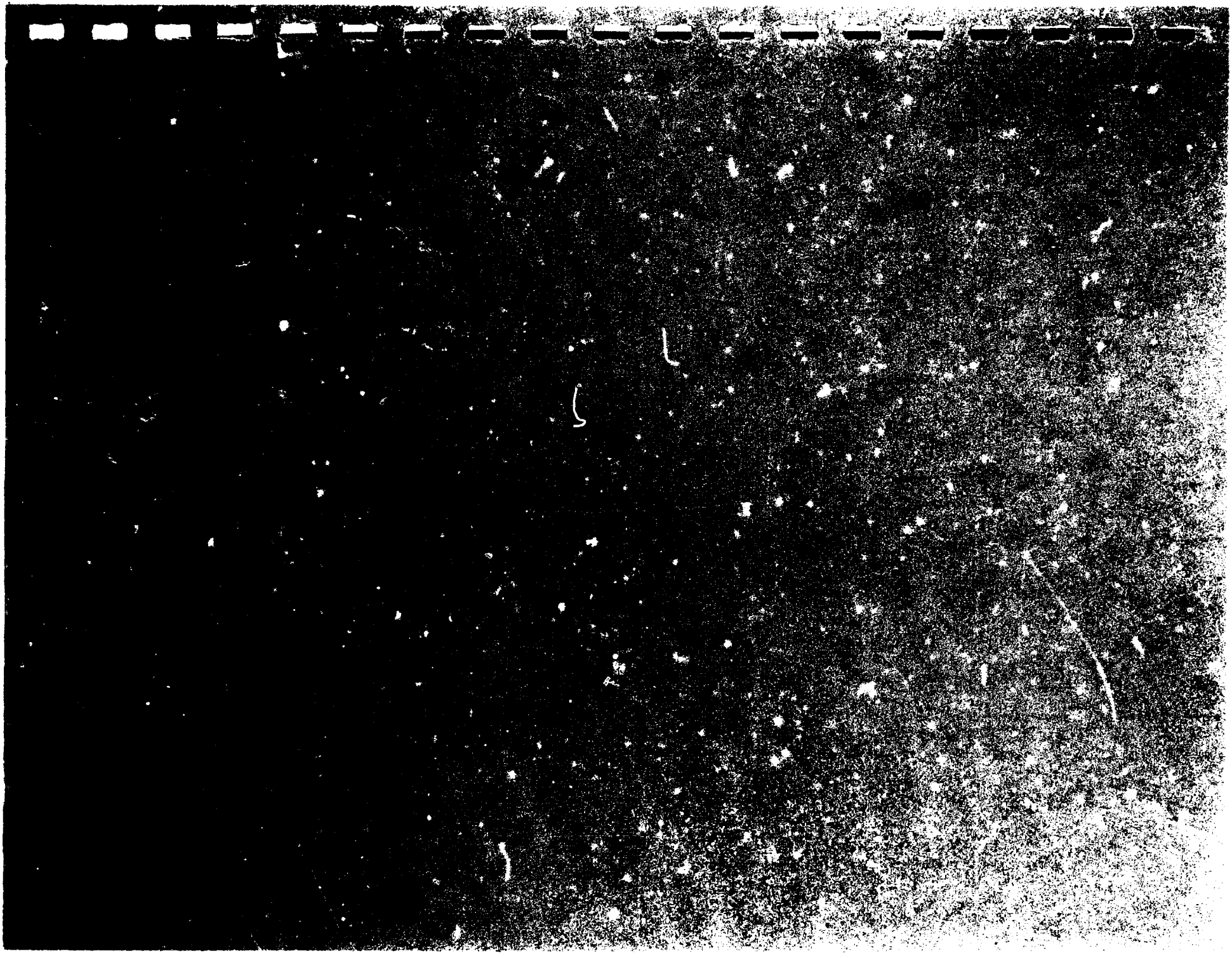
(2) Procedural Activities

- The program activities include:
  - Develop and use reports inventory
  - Review reports for retention
  - Control reports content
  - Control reports format
  - Monitor and manage reports
  - Control reports redundancy.

- The Program will be the proponent to establish, use, and see to the maintenance of a HQDA dictionary/directory of HQDA reports, their information content, and their distribution for use in the program management process as well as by individual Staff Agencies in program compliance and reports use.

- Individual Staff Agencies will maintain a similar capability of the reports which they employ/produce with their individual information systems.

These IRM functional programs are fundamental to the establishment of an automated information resource management program at HQDA. Although they do not necessarily comprise all of the functions and activities which HQDA may need to develop, they provide a starting point for HQDA in the management of its total information resource. The next chapter discusses the information costing methodology and provides a framework for HQDA to identify its information costs.



VII. THE INFORMATION COSTING METHODOLOGY

1. INTRODUCTION

An information costing structure and methodology is an essential aspect of the effective management of HQDA information resources. This is because accounting structures and systems are the traditional approach to reducing all kinds of resource use and consumption to a common denominator dollar basis - whether we talk about the salaries of personnel, the rental of office space, the cost of raw materials, or whatever. The information resource, therefore, cannot be treated as an exception. The problem is how to define, measure, capture, and organize information expenses.

Significant costs may be incurred during each of the information life cycle phases of supply, handling, and use. Thus, there are costs associated with collecting information from its original source, transporting it, storing it, processing it, accessing it, and actually using it to accomplish a mission objective. In this chapter we discuss some of the aspects of identifying information costs and present an initial methodology for tracking those costs. In this initial methodology we concentrate on the costs associated with handling information.

The definition of an "information handling expense" we are using here is based on the work done by the Commission on Federal Paperwork and is consistent with the definitions being put forward in various key Executive Branch policy guidance or planned legislation. According to these definitions, information handling expenses are all of those costs incurred by organizational cost centers which deal with information as a value-neutral commodity. Such cost centers are those information service units which collect, process, store, retrieve, manipulate and disseminate information in their role as information providers. They, in turn, furnish their products and services to other organizational units throughout HQDA which use the information to support problem-solving and decision-making.

Thus, under this definition, the following kinds of HQDA information service units would be generally classified as information handlers and the total costs incurred by such units would be considered as information handling expenses, including salaries, material costs, equipment purchases and rentals, and so forth. Thus latter classification of expenses is called an "object class" classification under Federal Government accounting practice. The types of costs that can be accumulated by object class are:

- Computer centers and ADP activities

- Telecommunications networks, centers and related activities, including message centers
- Printing, copying and publication activities, facilities and programs
- Paperwork management programs, including reports, forms and records management activities
- MIS staffs and information systems staffs
- Libraries, information centers, records depositories, clearinghouses, document rooms, and related facilities
- Word processing pools
- Statistical programs
- Other related information programs, activities, facilities and networks which collect, transmit, store, retrieve or otherwise manipulate data, documents or information.

While the above list is reasonably consistent and homogeneous, definitional problems do arise where the function of the servicing unit is not quite so obvious. For example, training and education elements or internal organization and methods staffs which do deal with information, but whose role is not one of providing an information product or service. In such cases HQDA must develop more specific criteria and guidelines.

Because no uniform or standard operational definition of an information handling expense is yet widely accepted, and because the very fundamental principles underlying Information Resource Management have not yet been followed as HQDA or DA policy, it is not surprising that HQDA accounting structures and methodologies do not provide for the systematic capture, recording, and presentation of information expenses to higher HQDA management levels for review. Although DOD has developed specific ADP cost reporting requirements, due to the form of presentation most HQDA information handling expenses are now hidden and buried all through the DA chart of accounts, in both direct and indirect (overhead) categories, thus rendering information costs effectively invisible to HQDA managers.

The consequences of this historical (pre-IRM) practice of not systematically identifying, capturing, collecting, aggregating, and presenting information handling costs to management are significant. For example:

- Line and staff HQDA officials cannot currently be held accountable for the effective and efficient use of the information resources they utilize in the performance of their duties, since the values and the costs of the

information products and services they demand and consume are nowhere defined or measured

- HQDA staff planning and budget officials cannot readily forecast the magnitude or kinds of information handling costs the various HQDA missions and programs incur, either in the particular or in the aggregate; they are thus unable to effect possible trade-offs between (1) less expensive and/or more efficient information-intensive alternatives and (2) more expensive and/or less efficient and effective labor or capital intensive approaches

- HQDA overhead budgets (sometimes referred to as "administrative expenses") are artifically inflated because they include information handling expenses which should be charged as direct costs to programs and cost centers but which, because of the absence of effective chargeback mechanisms and policies, are treated as central overhead

- Measuring and tying the utilization of information as a resource input to various output measures of HQDA mission and program effectiveness, such as productivity increases expected because of the installation and use of a new computer system, telecommunications network, or bank of word processing machines, is impractical if not virtually impossible, because information resource inputs are not identified and costed out as an information handling expense in the accounting system.

To deal with the many structural, methodological and policy deficiencies in the existing pre-IRM HQDA accounting environment, a number of steps should be taken and synchronized together in a carefully prepared and implemented IRM Costing Process. A few steps can be taken immediately, in the short term; others will have to await a more thorough study of alternatives and consequences. By following some of the precepts put forward by Richard Nolan and others which recognize that any organization passes through a number of growth stages, what is recommended here is a series of growth steps which should capitalize and build upon planned accounting reforms which HQDA and DA already have underway, e.g., the current effort to develop a new Army Management Structure (AMS) architecture undertaken by the Comptroller of the Army.

This chapter introduces the general direction and thrust which should be taken in implementing the HQDA Information costing Process. In it we suggest strategies and approaches and discuss possible impacts and consequences on various other components of the overall IRM program. In short, rather than a turn-key approach, what is needed in the information accounting area is a set of agreed-upon objectives, with a back-up implementation plan that will help HQDA move toward those objectives over a 1-5 year period and beyond. In the end, it is the HQDA accounting system which must provide the sound financial

underpinning that will enable HQDA and DA to harvest the benefits of the IRM approach. Exhibit VII-1 indicates some of the impacts of employing an information costing methodology.

2. DEFINITION AND BACKGROUND

Traditionally, in HQDA as elsewhere, the majority of an organization's information handling expenses have been treated as burden or overhead cost because they are associated with "paperwork processes" inherent in such activities as the printing plant, mail room, library, office work (which has typically been classed as routine and unproductive) and various other support services such as personnel processing and the services of staff departments such as accounting and payroll. Before the advent and increasingly widespread use of modern computers, telecommunications, and related information handling technologies such as word processing, micrographic, and reprographic equipment, such a management accounting treatment of these expenses may have made sense, if for no other reason that the ratio of overhead burden-to-direct labor and direct material costs was relatively fixed and considered invariable rather than variable. In short, they were controllable costs. Now they are not.

As modern information handling technologies have come to be used more and more in direct support of substantive HQDA mission and program activities, and not just in routine administrative activities, "office work" has come to be redefined out of the unproductive column into the productive column. While chargeback policies and techniques are increasingly applied to the operations of computer centers and printing plants, still the total information handling expense is largely invisible. HQDA management is thus unable to see, much less control, how HQDA information dollars are being spent. If costs are invisible and fragmented, they are thus intractable to management attention and corrective action.

The IRM concept calls for HQDA to deal with its information handling costs as both direct (i.e., directly chargeable) and indirect (pro-rated and redistributed), depending on end purpose and the nature of the servicing organizational unit. In the first place, it is not appropriate under the IRM concept to lump information costs in with other routine administrative expenses. They must be: (1) "shredded out" (captured); (2) identified as to nature or character, providing servicing cost center and consuming cost center; and (3) disaggregated and reaggregated, as needed, in order to portray, rank order, and prioritize the various HQDA information activities for management review and control.

With regard to the legitimacy of dealing with information costs in this way, it should be pointed out that accounting theory does not dogmatically prescribe some kind of theoretically inviolate list of eligible assets and resources for accounting capture and treatment. On the contrary, accounting theorists point out that just as different kinds of management problems arise in an organization, different

How Information Costing Impacts IRM Functions And Activities

IRM Function / Activity	Impact and Consequences
1. Setting IRM program goals and objectives	1. Improved management of total HQDA financial investment for information resources; capital and operating expenses separated; costs directed allocated in most cases instead of treated as overhead; productivity increases; better prioritizing of competing projects
2. Establishing IRM policies	2. Identification of where monies are being spent; valuing information investments more realistically
3. Technical support to IRM information supply, handling and user communities	3. Provide financial dimension for evaluating information handling capabilities, adequacies, upgrade needs, idle and excess time management, cost overruns, reducing overtime, cost recovery/chargeback implementation
4. Audit and compliance reviews	4. Help prioritize audit/compliance examination areas by furnishing financial underpinning to scheduling process
5. Appeals process for exceptions	5. Provide financial dimension to appeals/exceptions granting/denial process (other dimensions needed also)
6. Accomplishments and benefits reporting	6. Provide dollar basis for quantifying benefits and costs for new investments (in many, not all cases); measuring productivity and other gains in existing and planned information investments on dollar basis
7. DED/D development and maintenance	7. Provide effective tool for auditors and managers to trace the flow of data, functions and dollars throughout HQDA; improve communication between officers; cost control over data redundancies
8. Elimination/reduction of duplication and overlap	8. Help prioritize highest-to-lowest list of duplication/ overlap payoff areas by providing dollar basis for selection

How Information Costing Impacts IRM Functions and Activities

IRM Function/Activity	Impact and Consequences
9. Control over access and release of data	9. Provide financial dimension to decision rules on RIR access and release of data
10. Data security	10. Help prioritize where strengthened security safeguards could bring dollar payoffs in terms of minimizing fraud and abuse, wrongful disclosure
11. Lead agency application	11. Provide a better costing basis for making lead agency (office) assignments to develop new, multi-purpose multi-agency (office) information systems and data bases, thus reducing costs of proliferated single-purpose, single-office systems and data bases
12. Information requirements planning	12. Provide a better costing basis for estimating information-related capital and operating expenses; time distributing costs and benefits; amortizing return on *information investments*
13. Information systems planning	13. Provide better basis for forecasting information system resource needs (dollars, people, facilitates, equipment, etc.); monitoring expenses incurred periodically to reduce/eliminate cost overruns
14. Information budgeting	14. Values and helps differentiate controllable from uncontrollable information handling capital investments and operating expenses; improves basis for allocating overhead to programs and cost centers
15. Audit trails	15. Provide financial dimension to audits and compliance reviews from audit trail standpoint; helps prioritize audit selection
16. Technology assessment	16. Help pinpoint and prioritize where state-of-the-art technology will offer biggest return on investment payoff potential

How Information Costing Impacts IRM Functions and Activities

IRM Function / Activity	Impact and Consequences
17. Education and training	17. Introduces financial dimension for holding managers accountable for achieving IRM policies and objectives, and more importantly HQDA and DA missions and goals
18. Guidelines and standards	18. More consistent and uniform application of planning, management and control disciplines; uniform application of chargeback and cost recovery policies and principles to information handling programs
19. Practical utility	19. Provide a financial dimension to help make utility decisions (other dimensions also needed)
20. IRIS development and maintenance	20. Add financial capability to "item" tracking capability for information resource utilization
21. Records management	21. Help ascertain costs of information flows and holdings, thereby producing basis for valuing the investments, prioritizing them, improving retention and disposal programs and recycling information holdings
22. Forms management	22. Same as 21, but applied to HQDA forms
23. Reports management	23. Same as 21, but applied to HQDA reports
24. Periodic management reviews	24. Give financial dimension to information performance evaluation and measurement as applied to information handling programs and activities (other dimensions needed also); puts in place realistic incentives and motivation for better resource management

information about different kinds of costs is needed. Thus, in the context of the U.S. Federal Budget, for example, a variety of "special analyses" are needed to fully address the budgetary and cost consequences of different cross-cutting kinds of expenses and programs which do not neatly fit into either the program and financing schedules (based on budget authority, obligations, and outlays) or the object classification scheme which classifies costs based on the nature of the expense incurred rather than the program or project which incurs the expense. For example, there is currently a special analysis which presents Federal budget authorizations and obligations for just ADP and Telecommunications Sytems (Section 43.2 of OMB Circular A-11, and the corresponding Exhibit 43).

What is suggested here, in part, is much the same idea - a special analysis approach for dealing with information handling expenses at the HQDA level. In addition to providing for the mechanical capture and identification of information expenses in the accounting system, HQDA officials must shift their management perspective in looking at information costs. Instead of looking at such costs in the traditional manner as an overhead expense that should be periodically pruned back, officials must come to look at information handling costs as a major resource - like personnel and budgetary authority.

3. OBJECTIVES IN ADJUSTING HQDA ACCOUNTING APPROACHES

In moving a large segment (but not all) of information handling expenses from an overhead treatment to a direct resource treatment, HQDA should keep in mind six specific objectives.

(1) Information handling expenses should be made highly visible and thereby be subjected to the same rigorous management discipline as is presently afforded personnel (direct labor), direct material (supplies and equipment), and new budgetary authority. In these areas, DOD or DA have already developed some accounting standards and guidelines and can thus compare past resource performance with expected (future) performance. Such standards and guidelines must also be established for the information resource.

(2) Within HQDA (and eventually Army-wide) an internal market should be created in the planning-programming-budgeting context that will allow careful consideration and weighing of possible trade-offs among alternative information products, services, and systems and between information-intensive approaches and labor or capital-intensive approaches. Effecting such trade-off judgments should be begun at the lowest levels of the HQDA staff and proceed upwards until they are, eventually, considered within the context of the all-Army budget.

(3) HQDA information handling investments (e.g., a new bank of mini-computers; new or upgraded telecommunications equipment; the establishment and operation of a new data base; etc.) should

be taken up by top HQDA management levels, as well as by program and budget staff officials, as line items in the normal HQDA planning-programming-budgeting management cycle. Implicit in this objective is the requirement that information resource "inputs" be related wherever possible to approved HQDA mission and program "outputs". To repeat, it is acknowledged that the accounting treatment of a significant level and cost of information handling capability will remain in general-purpose overhead categories where cost and responsibility centers serve a variety of HQDA staff elements and activities. It is not suggested that all information handling costs be placed into direct cost accounts, but, rather, that information resource expenses be captured and identified, and disaggregated and reaggregated into useful formats for management review and control.

(4) Productivity improvements (which is one of the priority areas where information handling offers the greatest payoff potential) should be more accurately pinpointed and evaluated in programs and activities which are heavily information and paperwork-intensive. Clearly this is the case with the HQDA staff itself with its focus on planning and managerial control rather than the production of hard goods or services. In so doing, HQDA would, in effect, be undertaking much the same kind of an economic benefit: cost analysis of such important information-intensive programs like office automation, as it undertakes for other kinds of capital investments, such as a new weapons system, or personnel program, or logistics and maintenance activity.

(5) Diverse but complementary and reinforcing information handling technologies should be brought together in the HQDA program and budget decision-making contexts, and treated as integral wholes rather than as fragmented and disparate pieces of different overhead and direct accounts as is now the case. For example, as computer, telecommunication, and micrographic hardware and software is more closely integrated in multi-purpose Office of the Future systems, the aggregate investment in all of the information handling capabilities can be looked at as a single, composite investment and not as a piecemeal conglomeration of disconnected overhead expenses.

(6) New state-of-the-art information handling capabilities should be more easily compared with existing, obsolescing capabilities in making upgrade, trade-in, buy-or-lease, and similar kinds of decisions. At a time when information hardware and software technologies are changing so rapidly and becoming more costly in the sense that they are more widely used, such a management capability is very important.

4. TECHNICAL ACCOUNTING CONCEPTS

For the most part, traditionally, accepted and established DOD/DA accounting principles and standards are adequate to implement the changes proposed here to do the job. It may be useful to review some of the technical areas separately. First, we discuss the information accounting classification implications.

In the first place, expenses for information handling activities, like all other resource expenses, need to be classified in a number of useful ways; no single classification scheme or approach is fully adequate. So, for information resource accounting, at least three kinds of classifications are important:

- Classification of information handling expenses by object classification, such as personnel compensation, purchases of supplies and equipment, rents, utilities, and so forth, by HQDA program and cost center

- Classification of information handling expenses by program or project (i.e., HQDA authorized program, at whatever level is deemed appropriate)

- Classification of information handling expenses by cost or responsibility center (i.e., HQDA staff element which incurs the cost of buying an information product or service or system; and the element which provided the product or service or system); sub-breakouts within cost center by program or project, and by object, may be desirable.

Another technical area has to do with the use of codings, and the coding of information-related transactions as they are processed into and out of the cost accounting system. For example, new purchases, vouchers, chargeback transactions for internal services, "sales" of products and services to non-HQDA user components such as the other military services, OSD, Defense agencies, or non-DOD elements, and so forth. The existing coding schemes will require some changes as evidenced by the problems inherent in the current AMS for Program 3. This area should be explored in more depth to make final determinations.

A third technical area has to do with the use of appropriate analytical methodologies for estimating information expenses for budgeting purposes, for capturing information expenses for entry into the accounting system, and for disaggregating and reaggregating information costs for various accounting report formats required. As is the case with other resources - personnel, dollars, material costs, and so forth - no single analytical methodology is adequate. Among the techniques that will be used in the information costing system will be cost finding techniques, sampling, average cost methods of valuation, replacement cost, standard cost, joint costing, and others.

HQDA will need to study how these various technical analytical methodologies can be applied to information in conjunction with current HQDA accounting practices.

A fourth technical area involves the development of standard information costs, and guidelines for monitoring cost trends (e.g., the use of threshold values or ceilings or limits). In so doing, the general technique of variance analysis can be utilized to ascertain whether cost increases or decreases during any given accounting period, for example, or trends such as seasonal variations, are within acceptable tolerance limits. Moreover, comparisons can be made across internal HQDA division and office lines for the same information activity to illuminate possible differences in information efficiency and effectiveness.

A fifth technical area has to do with information audits. While audit techniques and methodologies are closely related to accounting analysis techniques and methodologies, there are important differences between them. One important use of the information audit is to fulfill Federal Government regulations and policies with respect to the so-called "practical utility" test as prescribed in OMB Circular A-11 and Circular A-40.

5. IMPLEMENTING THE INFORMATION COSTING SYSTEM IN HQDA

In the preceding introductory material general concepts and principles have been put forward. In this section, a specific step-by-step approach is suggested in outline form. The precise timing of the steps, exact resource requirements for executing each step, and more detailed considerations of the interdependencies of the steps will need to be determined by HQDA in implementing the information accounting system.

(1) Identify (Define) Information-related Costs

As a matter of policy, the information cost criteria which HQDA should utilize in the definition process should include, as a minimum:

- ADP/Telecommunication/Associated information handling hardware
- ADP/Telecommunication/Associated information handling software
- ADP/Telecommunication/Associated information handling facilities
- Information handling media (e.g., paper, tapes)
- Personnel assigned to information functions (direct and indirect labor)

- Other supplies and equipment involved in information activities (i.e., beyond media such as paper and tapes)
- Overhead costs pro-rated to information functions
- Rents and utilities for information services externally acquired
- Other objects of expenditure not otherwise covered by the above.

These costs presently appear in a variety of overhead or direct accounts scattered throughtout HQDA and are subject to a wide variety of accounting analytical treatments, some of which may be inappropriate, given the IRM concept (but certainly not all).

In addition to directly identifiable expenditures ascertained through the formal accounting system, the identification of "lost opportunity" costs (i.e., the estimated cost of shortfalls in HQDA mission accomplishment due to ineffective information resource utilization) is an area to be considered. Additional research is needed to determine specific approaches to measuring how lost opportunity costs might be integrated into the IRM Costing Process.

Additionally, the practice of automatically expensing most information related investments should be discontinued in favor of a more realistic and balanced mix of capitalized and expensing policies. Costs, in other words, for major information handling investments should be amortized over an extended period of the lifetime of the investment's expected use.

Identifying the first three of the above listed information expenses (ADP/Telecommunications/Associated information handling hardware and software facilities) is relatively simple and is already facilitiated by an OMB Circular A-11 requirement that requires departments and agencies to sort out these kinds of expenses in order that the special analysis referred to above (Section 43.2) can be prepared for the annual Federal budget. While DOD complies with this requirement, the Services must support DOD inputs. But identifying related information handling supplies and equipment is a little more difficult (for one thing, "associated equipment" is not defined in OMB Circular A-11 and word processing equipment, micrographic and reprographic equipment and supplies are in different accounts). Identifying labor costs, both direct and indirect costs, and assigning them to information related activities is perhaps the most difficult task. In this regard, the IRM Administrator, working with appropriate HQDA budget and accounting and program staff, should make recommendations for defining these accounting boundaries and developing necessary supporting procedures, including allocation formulas.

It should be reemphasized before going on to the next step that training and orientation of personnel in changes effected to accounting and managerial treatments of information related costs should be incorported into appropriate IRM education, training and familiarity orientation plans and programs, since all personnel must come to look upon the information costing methodologies in the same way and understand the fundamental principles and purposes behind analytical treatments and new accounting management report formats.

(2) Track Information Cost Expenditures

Tracking depends on measurement of the value of information transactions (i.e., inputs and outputs). But, once again, no single "information unit of measure" or measurement methodology is fully appropriate for the full spectrum of information resources utilized in the HQDA IRM program. For example, in the case of centralized data processing services, chargeback and cost recovery procedures may be based on some formula representing a mix of direct labor, machine time, supplies, and pro-rated portion of the servicing cost center's overhead expenses. So the output unit of measure is the particular formula used. But in the case of costs associated with designing a new information system or developing a new data base, the information activity, in a manner of speaking, is much more labor intensive and the unit of measure will be different. Keeping score on the various costs and their respective units of measure is precisely what accounting systems are supposed to do in order that a historical record can be built and the cost baseline periodically reviewed to discern possible problematic cost/workload/volume interrelationships. Indeed, without the capability for tracking such costs, it becomes virtually impossible to sort out changes in volume from changes in productivity; or changes in work mix from productivity; or the effects of inflation from changes in productivity.

In this regard, there is also the special problem of selecting the particular unit of measure which effectively correlates inputs with outputs. For example, if the unit of measure is defined improperly - too broadly or too narrowly or incorrectly - it will distort this input consumed: outputs produced relationship. To pick a simple example in the inventory control area, in measuring warehouse operations, at least four alternative units of measure are theoretically possible - line items processed, boxes handled, tons handled, and manhours expended. Only by careful study undertaken by industrial engineers and statisticians is it possible to ascertain the degree of correlation between each of the four theoretically viable alternatives, and the preferred one where the correlation is the highest. While this analogy clearly over-simplifies the problem when it comes to measuring the efficiency and effectiveness of information related activities, the same general principles apply.

(3) Establish Standard Information Performance Costs

It is both possible and necessary to establish a standard cost for each kind of measured information output. The reasons for doing this are fairly obvious, although the notion of "information performance" is not always readily grasped and may well be considered a new concept in some HQDA elements not accustomed to dealing with information systems and products and services regularly. What information performance means, simply, is that information produced or acquired should be used effectively and efficiently to support problem-solving and decision-making. Further, that which is used results in concrete improvements in HQDA's ability to achieve its missions and goals.

Variance analysis is one of the accounting techniques used to compare expected information performance against actual information performance. For example, it addresses the question of determining whether actual performance falls within the standards established; and if not, why not? Standard costs are already used in some areas, but in most cases, standard information costs have not yet been established. The process of developing standard costs may take anywhere from 3 to 5 years, or even longer, depending on how much data is needed and how complex the gathering and recording process required.

(4) Perform Analysis

In a sense this step and the preceding step are inseparable. Standard costs are established precisely because analysis of variances between expected and actual information performance should be undertaken. The kind of analysis undertaken will vary depending on the particular variety of information cost performance examined. Thus, analysis of the estimated costs associated with the acquisition of a new piece of computer hardware would be different from analysis of estimated costs associated with designing a new information system. In the former area considerable guidance already exists including, for example, OMB Circular A-11 (the budget preparation process); OMB Circular A-25 (user charges); OMB Circular A-76 (policies for acquiring commercial or industrial products); OMB Circular A-94 (discount rates to be used in evaluating time-distributed costs and benefits); and OMB Circular A-109 (major system acquisitions). Additionally, there are FMC, FPMR, DOD and HQDA implementing regulations which apply.

The end purpose of this step is to provide HQDA management and accounting staffs with clues as to why actual and expected information cost performance are out of line with one another, and to make suggestions as to what corrective actions are needed to redirect programs and activities to get them back on course again.

(5) Redirecting Information Programs and Activities

Again, it is difficult to separate this step from the preceding one. Analysis is but the prelude to taking action to redirect (strengthen, upgrade, shift resources, etc.) a program or activity. The range of options available to HQDA management is broad: cancellation, suspension, delay, deferral, replacement, reorientation, redesign, and so forth. In a few cases sanctions may be imposed, but it should be remembered that the central purpose of the information costing system is not as much to punish "poor" information managers as it is to offer managers an opportunity to redirect and strengthen the activities for which they are held accountable. By having information standards, for example, to use as a tool, they can augment their own leadership, initiative and creativity.

(6) Closing the Information Feedback Loop

Redirecting an information program or activity may or may not be a simple, short-term task. In some cases the results of analysis may well require that information plans and information budgets be adjusted in the light of the lessons learned during the analysis. This is sometimes called "closing the feedback loop." It means, simply, that results of evaluations, audits, and accounting analysis are plowed back into initial planning, programming and budgeting stages and those initially selected courses of action are modified appropriately. Perhaps more or less resources are needed, or the character or mix of those resources should be changed; perhaps the timetable for a project is unrealistic - too long or short or not "PERTed" properly; perhaps staffing is inappropriate; perhaps equipment and facilities are inadequate or improperly set-up and pre-tested; and so forth.

6. SUMMARY AND CONCLUSIONS

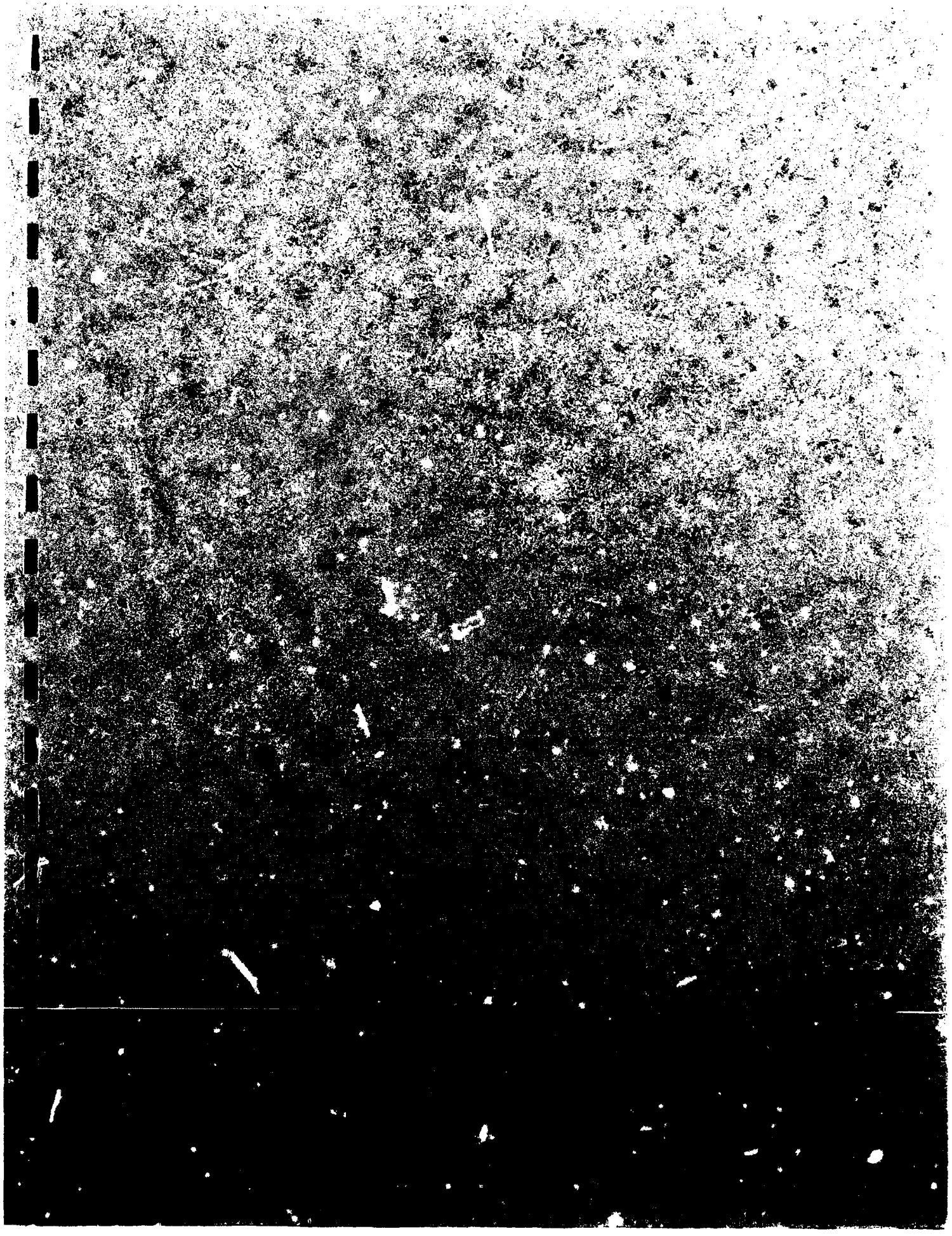
In order to fully implement the overall HQDA IRM Program, certain changes must be made to historical (pre-IRM) HQDA information costing policies and practices. The composite set of changes required is described in this chapter as the IRM Costing Process. The IRM Administrator will have responsibility for coordinating the development of this important process, in close consort with HQDA financial management and other affected staffs.

A few of the steps that are necessary in the IRM Costing Process can and should be taken immediately. For example, definitizing the specific list of information handling expenses, and moving toward a more comprehensive installation of charge-back policies and procedures in all information service areas.

Most steps will require careful planning, and time-phasing, for they will involve institutionalizing new policies and changing

traditional ways of doing business. For example, the supplemental coding of information-related transactions in the accounting system so that they can be separately tabulated and aggregated; or the divising of additional management accounting reports that will reflect a column for information handling expenses; or the development of standard information costs.

In short, the first of six major IRM Costing Process implementation steps must, obviously, be undertaken at the beginning so that the information resource can be made visible and tangible to the IRM Administrator, information managers, and other management and program officials. The IRM Costing Process will be the framework that serves as the baseline against which problems and progress can be measured. Throughout its development, implementation, and continual monitoring, the IRM Administrator will work closely, as mentioned, with appropriate elements of the HQDA staff.



VIII. THE INFORMATION RESOURCE INFORMATION SYSTEM (IRIS)

The preceding chapters of this report have addressed the concept of managing information as a resource as well as the functional description of an IRM program for HQDA. This chapter presents a conceptual discussion of a critical tool for such management, the Information Resource Information System (IRIS). In addition, we present a functional description of the most important component of the IRIS: the Information Resource Directory (IRD). The IRIS and IRD do not contain the actual data and information that comprise HQDA's information resource, but rather they contain pertinent information about that data (metadata) regarding the characteristics of the data and their inter-relationships.

The IRIS and IRD are intended to provide information to assist HQDA in planning for, controlling, and making cost effective utilization of its data and information. To accomplish this, the IRIS provides structured knowledge regarding what data and information exists, their form and location, and how they are currently being used. This system can be used to identify what within the information resource would be affected by a proposed change and can assist in the development of plans for new uses of information or the acquisition of new information. It is important to note that the IRIS is not necessarily an automated system, although several of its components may be automated. Our discussion of the IRIS concept is presented as follows:

- The Information Resource Information System
- Functional Description of the Information Resource Directory.

This chapter does not present a detailed design of the IRIS or IRD, but presents a discussion of the concepts.

1. THE INFORMATION RESOURCE INFORMATION SYSTEM

The Information Resource Information System (IRIS) is a framework within which to accomplish the management of data and information resources in an orderly and systematic fashion. The system will include information about sources, services, products, and individual information systems which may deal with any aspect of HQDA's operations and activities. The system will be concerned both with the substance and the content of each of these information systems and with a profile of their identity, location, purpose, use, and other key attributes.

The IRIS will provide "information about information" as a metadata system, as seen in Exhibit VIII-1. However, this does not necessarily mean that the IRIS is a large, integrated and totally automated base of information. Parts of the IRIS may be automated (e.g., Information Resource Directory, Data Dictionary/Directories) but the other integral parts such as policies and plans may, in fact, be manual processes. The important aspect is the systems approach to developing the IRIS and effecting the necessary coordination among its components and their individual proponents.

As seen in the exhibit, the IRIS consists of metainformation contained in many different information bases, which is collected during the various stages in the life of the information as well as from the various information system life cycle phases. All of this metadata and metainformation provides the framework for the overall IRIS concept. Thus, IRIS is a system of information management tools.

The objectives of the Information Resource Information System are as follows:

- To provide managers at all levels within HQDA with information to assure that resources are obtained and used effectively and efficiently in the accomplishment of HQDA objectives
- To provide information that is useful in the formulation of HQDA objectives and plans
- To provide information to support program proposals and requests for funds
- To provide a means of assuring compliance with requirements relating to information resources.

The IRIS is essential to bring some order and coordination to HQDA's scattered and fragmented information management activities. The system will assist in this process by providing a thorough, systematic, and comprehensive inventory of the information resources. The IRIS would be keyed to the primary objectives of managing information at HQDA and would facilitate access to critically needed data, thus reducing the time and effort required to find such information. IRIS will also provide the necessary information support services to system users and provide the potential for increased reutilization of information.

Today, HQDA is faced with several problems inherent to their traditional systems approach. The "vertical stovepipe" approach to systems management has served a purpose at HQDA, however, it has also produced many problems in managing information at HQDA. These problems include information systems that are not reasonably adapatable to change (time and cost) and the existence of conflicting and inconsistent information among systems. Users are developing manual

HQDA Information Resource Information System Concept

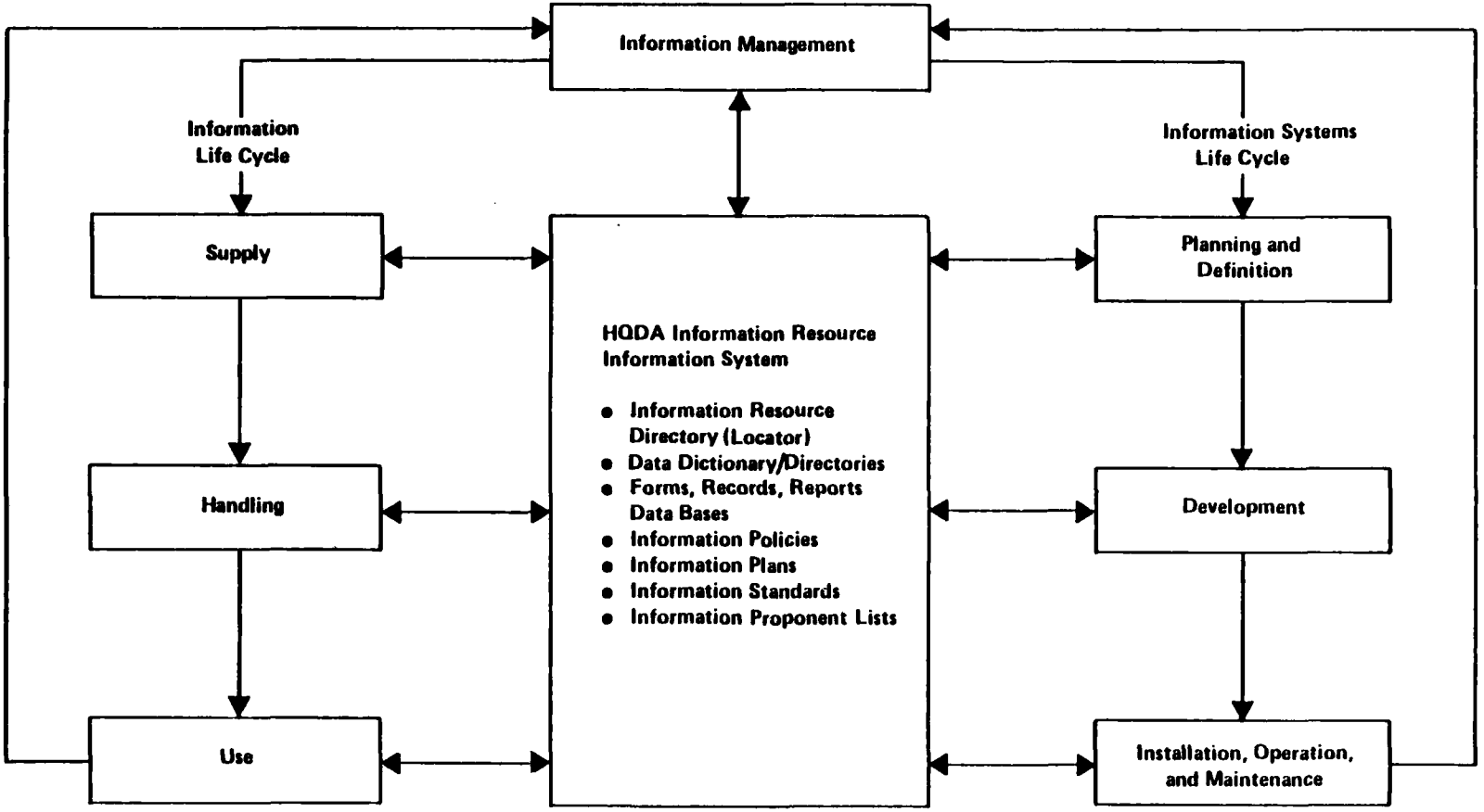


EXHIBIT VIII-1

procedures to bridge system inconsistencies and are trying to maintain the accuracy and quality of systems and data definitions.

The Information Resource Information System concept when viewed in concert with the information life cycle and information systems life cycle phases as shown in Exhibit VIII-1, provides for the following information resource management benefits in solving these identified problems:

- Support of the entire information life cycle, not just the handling phase
- Complete, accurate definitions and cross referencing of data processed by HQDA's systems
- The capability to assess precisely the impact of change to current systems
- The control necessary to allow systems to share data, while maintaining the consistency of the information produced
- Broad logical data views presented early in the development process
- Increased auditability of systems and the data they process
- Control over data redundancy
- Management of HQDA's data bases
- Specification of the systems and data component relationships within the environment
- Avoidance of redundant systems development
- Support of the entire information systems life cycle, not just the development process.

Initially, Data Element Dictionaries and Directories (DED/D) were thought to be the solution to problems associated with identifying and controlling data stored by HQDA information systems. However, these tools are limited and do not:

- Assist in decisions the information systems users must make
- Determine the reports necessary to faciliate the decisions on the information systems
- Identify the data necessary to prepare the reports
- Define any required formulation or other logic processes

- Determine if the data or information is already available in some other system or how it will be collected and stored

- Identify the administrative procedures and controls necessary to assure proper data collection and processing.

The typical DED/D approaches the identified problems in such a way that it is not integrated with the entire information systems life cycle process. In order to implement an overall HQDA-wide information management approach, instead of a strictly technical approach to controlling data and information, a more effective facility is needed. This facility is the Information Resource Directory (IRD).

An Information Resource Directory is an integral part of IRIS. It is an information system in and of itself whose subject matter is information about HQDA on the following classes of entities:

- People and HQDA organizational components

- Events

- Processing components

- Data components.

The IRD includes attributes about these entities, the relationships that exist among the entities, and the context in which these relationships exist. The following section presents a functional description of the Information Resource Directory and includes a definition of the objectives, inputs, activities, and outputs.

2. FUNCTIONAL DESCRIPTION OF THE INFORMATION RESOURCE DIRECTORY

The Information Resource Directory (IRD) provides locations and definitions of the information resource entities of HQDA through its hierarchical concept. Each entity has characteristics and relationships which are called attributes. At this point it is important to note and distinguish between the IRD and the repositories in HQDA that contain data or information (e.g., data bases). All data and information are resources of HQDA (within restrictions such as security and privacy) and should be accessible to all levels in the organization. These repositories, such as Data Element Dictionaries and Data Element Dictionary/Directories, contain metadata and are mainly used by individual agency or DPI data base administrators, systems analysts, software designers and computer programmers. The IRD contains information about the information resource of the organization, and references metadata HQDA-wide. Therefore, the IRD concept provides for a hierarchical structure consisting of: the IRD itself, which would contain metadata about other repositories of metadata within HQDA; and the other repositories.

The IRD provides the mechanism for locating the sources of information and provides managers with a consistent view of the organization's information resource. It will aid HQDA managers and IRM functional program managers in such areas as information planning, data standardization, and information analysis by containing metadata necessary for decision-making in each of these areas. The metadata contained in the IRD should be prioritized and initially restricted to only the most essential and important elements in order to facilitate implementation.

The two major components of an IRD are:

- The entities, which have separate and distinct existence or definition and comprise the HQDA information resource, and
- The attributes which are the characteristics or properties of an entity that define its context.

Several entities may support each organizational level in the HQDA structure. Managing the design, development, implementation, and use of these entities can be accomplished by the establishment of the IRD by which the entity life cycles can be tracked. The IRD will provide a means for supporting management in controlling its information resource and coordinating its various functional information management programs.

(1) Objectives of the IRD

The major objective of the Information Resource Directory is to assist HQDA in the management of its information resource. The other objectives of developing an IRD at HQDA are as follows:

- Strengthen the management of the information resource at each functional level of HQDA by having them centralize their individual inventory process into local repositories to eliminate unnecessary redundancy, unplanned inconsistency, and unneeded entities
- Reduce the cost of information at each stage in its life cycle by minimizing unnecessary redundancy in collection, processing, reporting, and retention of data
- Provide information about the information resource to meet the needs of decision makers at all levels in HQDA
- Permit more efficient determination of the impact of anticipated and/or proposed changes by those HQDA elements that plan, administer, and maintain the information resource
- Establish appropriate monitors, controls, and surveillance measures to track the progress of an information plan or activity

- Provide and maintain a repository of metadata about the information resource that relates to IRM policy decisions of HQDA

- Promote the development of multipurpose information, common definitions, data standards, and the shared use of the information resource.

(2) Framework of the IRD

All of the inputs, activities, and outputs of HQDA comprise an inventory of its information resource. Activities process inputs, and outputs result from work performed on inputs by each of the activities. Each element of the inventory is called an "entity." An "entity class" is a group of entities with common characteristics. Exhibit VIII-2 depicts the HQDA IRD inputs, activities, and outputs which are discussed in the following paragraphs.

Many names and descriptions exist for the entities which would be used as input to the HQDA IRD. These entities may be continually subdivided into lower level entities until all HQDA's operations have been identified. This provides for an "entity class hierarchy." The following examples of entity classes are intended to provide an understanding of the meaning of each entity class. The use of these or additional entity classes in the IRD is dependent upon their relative importance to HQDA.

- HQDA Policies and Procedures - Guidelines aimed at efficient operations at all HQDA organizational levels and a series of step-by-step processes within an application which produce specified results

- HQDA Plans and Programs - The activities directed toward a common purpose, objective, or goal undertaken or proposed by HQDA to carry out responsibilities assigned to it

- HQDA Systems - The composite of equipment, skills, techniques, and information capable of performing and/or supporting an operational role in attaining specified management objectives

- Applications - The first level subdivision of a system consisting of a series of processes or procedures devoted to accomplishing a specified portion but not all of the system objectives

- Files - Collections of related records which are treated as a unit

- Data elements - Basic identifiable and definable units of information.

HQDA Information Resource Directory
Functional Description

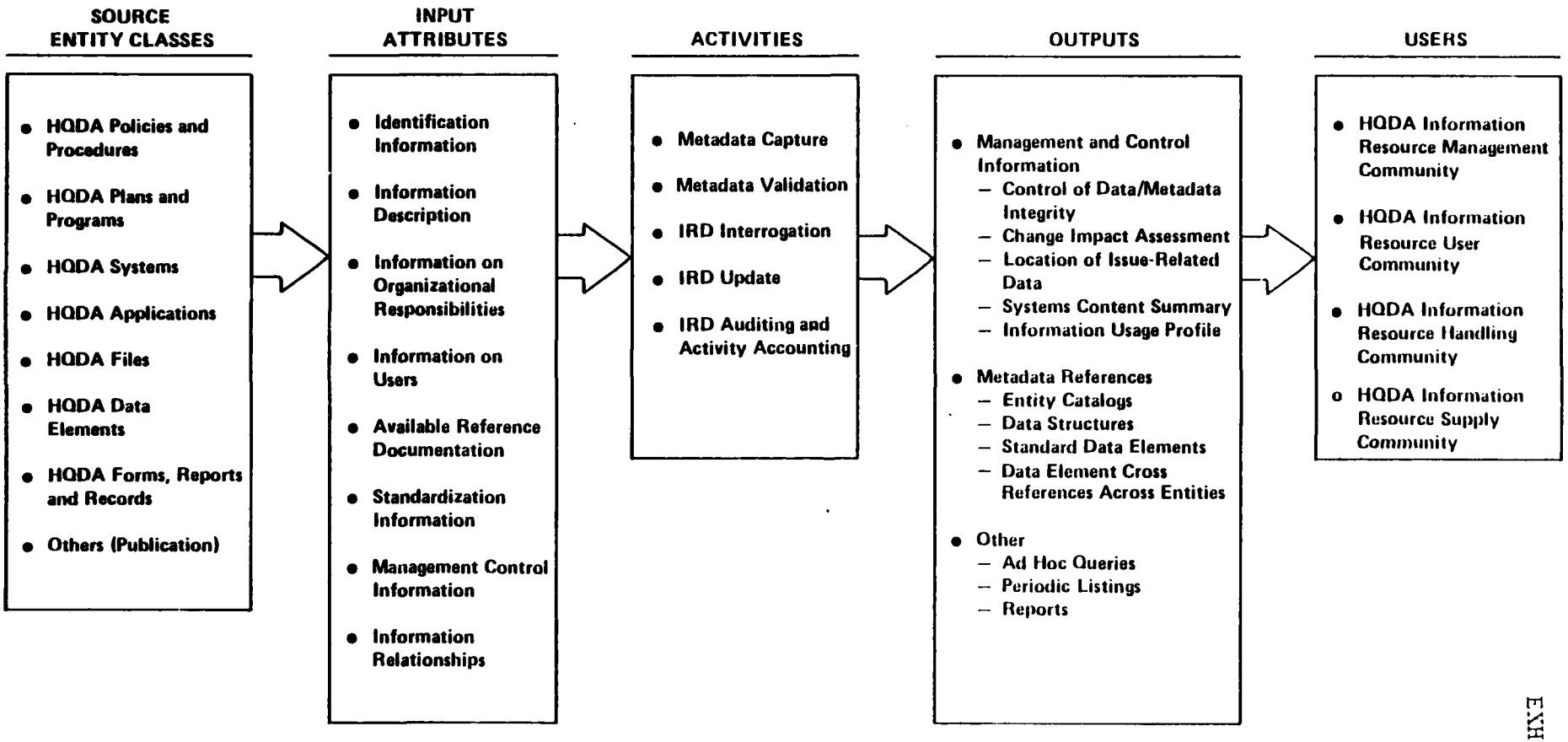


EXHIBIT VIII-2

- HQDA Forms - a printed design with or without text which contains blank spaces to be filled in to record, collect, or transmit data or information

- HQDA Reports - narrative, statistical, or graphical presentation of one or more pieces of information

- HQDA Records - anything that official data or information is put on or in.

These entity class examples structure HQDA's entities into a hierarchical framework to provide a means of viewing the entities as a manageable information resource. These entities may occur many times in any one specified entity class. Every time this occurs, each entity will have a specific set of attributes. These attributes are maintained in the IRD and reflect the information needed to manage the information resource. An entry in the IRD is comprised of all applicable attributes which define a specific occurrence of an entity. The major categories of entity attributes include:

- Identification information

- Information on organzational responsibilities

- Information on users

- Available reference documentation

- Standardization information

- Management control information

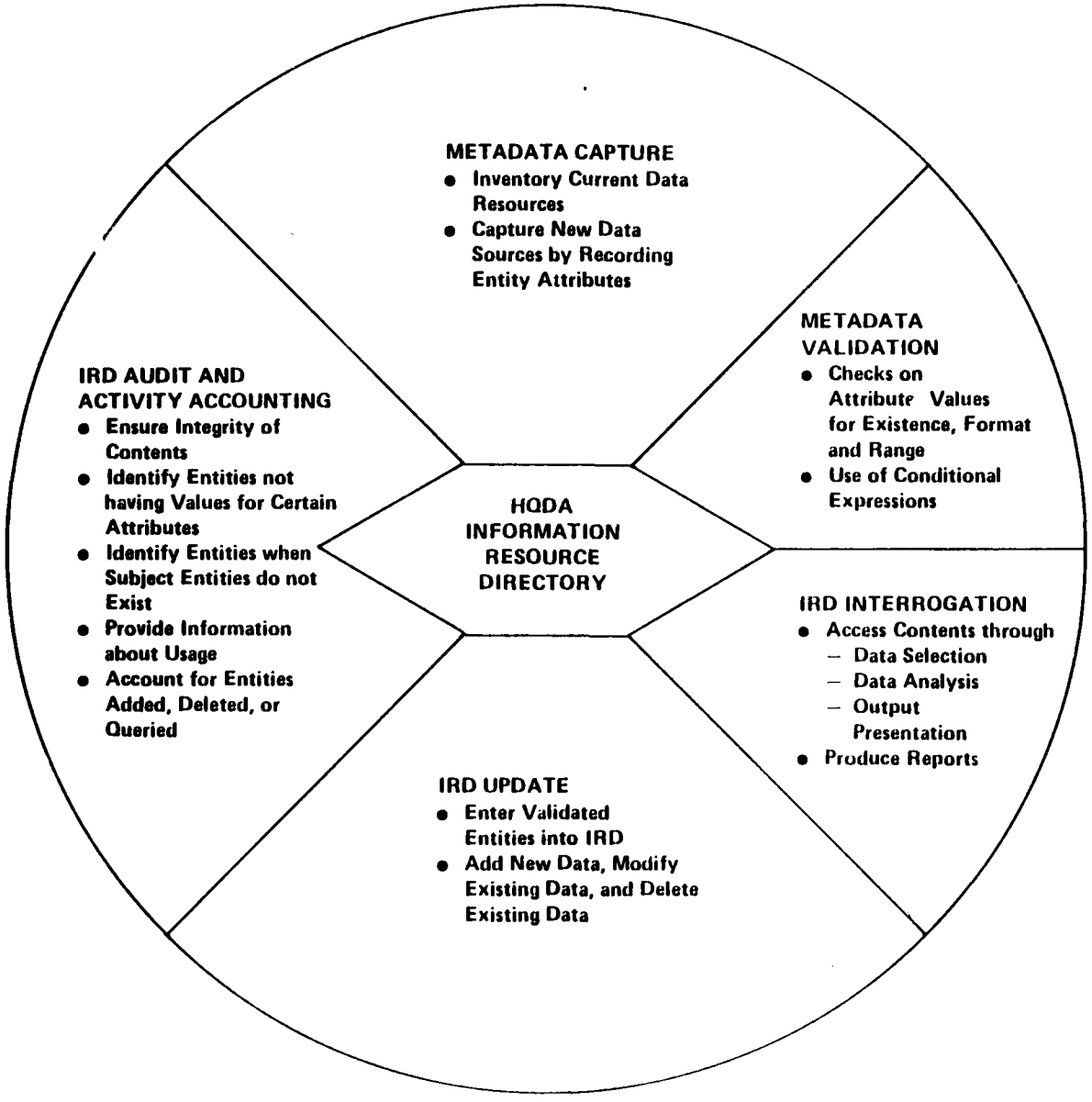
- Information relationships.

As mentioned, this set of attributes are representative of the metadata to be contained in the IRD. The attribute information contained in the IRD is only a portion of all the information that HQDA maintains, but these attributes offer a starting point for HQDA in establishing its IRD. Other attributes will be required and recorded as the IRD concept is further defined and developed.

As shown in Exhibit VIII-3, the following IRD system activities provide the process in which IRD inputs are transformed to output:

- Metadata Capture - Includes inventorying HQDA's current data and information, recording the entity attributes and capturing new information resource metadata as it develops

HQDA Information Resource Directory Activities



- Metadata Validation - Metadata must be validated before entering into the system. This includes checks on attributes for existence, format and range as well as logical relationships

- IRD Interrogration - Provides the IRD users with the capability to obtain information to support Information Resource Management through ad hoc and periodic reports

- IRD Update - Consists of entering validated entities into the IRD which includes adding new metadata, modifying existing metadata, and deleting existing metadata

- IRD Auditing and Activity Accounting - Ensures the integrity of the contents of the IRD by identifying those entities not having values for certain attributes and where subject entities do not exist. This activity also provides information about the IRD usage which include statistics that reflect the type and time that was required to search specific entities by and/or for a user.

The ad hoc queries are the most responsive type of output especially if they are performed interactively at a computer terminal. Periodic listings will prove to be the most cost-effective type of output for many users needs or requirements. This is because more frequent types of information requirements can be anticipated, and output formats can be tailored to these requirements. The directory itself can be used to edit or verify not only proposed changes or updates to the organizations' operating files, but the directory entries as well.

(3) Benefits of an Information Resource Directory for HQDA

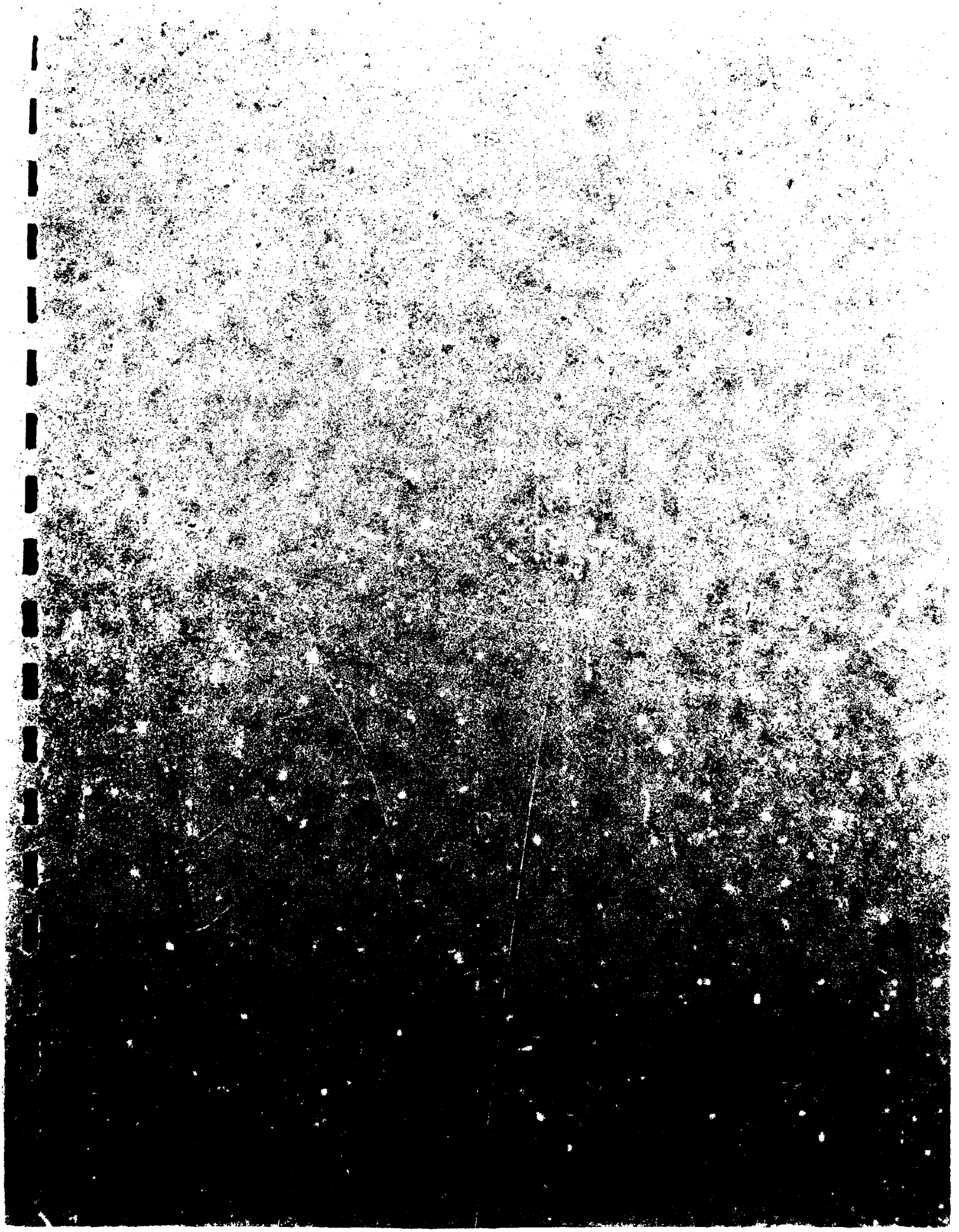
In order for the IRD to be an effective tool it must be capable of providing information that assists HQDA in identifying, acquiring, disseminating, and controlling its information resource. The recording of attributes about each entity provides HQDA with the means for appraising the relative importance of each entity. This allows each entity to be uniquely identified so that it appears only once within the directory. Automated searches of these attributes assist in identifying elements which are possible duplicates. The search capabilities of the IRD gives the ability to develop new ways of relating information for assisting in the management decision-making process. This allows modifications or improvements to existing systems to be precisely interfaced with new systems development.

The IRD becomes the central repository in a hierarchical structure of repositories which contain the most recent and accurate metadata for systems designers and maintains relationships between the system component and associated data components. Identification of these system/data relationships

has been shown to be one of the most important aspects in effective information systems development by reducing redundant design, aiding communications, avoiding semantic misunderstanding, reducing cost, and increasing quality.

Throughout the processes of identification, classification and description of the metadata to be used in the IRD, consideration is given to the standardization aspects of these processes. Close coordination with the HQDA standards process is required with respect to standard data representations. By prescribing consistent formatting rules or specific names, codes or abbreviations, standards are in effect being established. Standard definitions should be used whenever available and candidates for standardization should be identified as a result of constructing the IRD.

The IRIS and IRD will provide information to assist HQDA in planning, controlling, and making the most cost effective utilization of its information. These tools provide more relevant information focused on the needs of HQDA and can be implemented in a variety of ways, e.g., centralized, hierarchical, incremental, monolithic, etc. The results can be reduced waste, cost savings and more effective execution of plans. These tools also assist the planning process for information systems development by providing a means of identifying standard definitions for the information, identifying alternative sources of information which may already exist, and providing a framework for the identification and verification of information system requirements. The next chapter discusses the factors and issues of the HQDA environment which impact the IRM organizational design.



IX. FACTORS AND PREMISES IMPACTING THE ORGANIZATIONAL DESIGN FOR IRM

In order to effectively introduce and make the concept of information resource management operational in HQDA, an organizational structure must be defined and established to support the IRM program. In this chapter we discuss the major factors in the HQDA environment which have had an impact on the organizational design. An understanding of these factors is important because they identify a set of restrictions and limitations which influenced the final design. For example, a key consideration in the design was how best to combine current HQDA activities with new IRM activities in one program organizational structure. Another major factor was the Phase I recommendation to implement IRM based on a distributed approach rather than a centralized or decentralized approach.

In developing the organizational structure to support the HQDA IRM program, we have given careful consideration to several other factors, including current HQDA organization, resource constraints, initial program scope, and assigned functional responsibilities, as they relate to IRM program concepts. Several organizational issues were also identified and addressed. In this chapter we discuss these factors and issues.

This chapter is organized in three sections as follows:

- Factors and premises impacting the HQDA IRM organizational design
- Organizational issues
- Conceptual Model for HQDA IRM Community

It describes in greater detail the factors which limited the organizational design options and highlights the major organizational issues formulated in Phase II. This discussion is important background material for understanding our organizational design presented in the next chapter and the impact of the factors on the implementation of the program discussed in Chapter XI.

1. FACTORS AND PREMISES IMPACTING HQDA IRM ORGANIZATIONAL DESIGN

The concept of managing information as a resource has multiple implications upon HQDA as well as its information resource. The scope of this study was limited to focus on data, primarily, and in a narrower sense, data which is automated and limited to HQDA systems. This

limitation in scope was a reasonable first step in dealing with all of HQDA's information resources and in considering how best to organize for and apply information resource management concepts.

Several premises have been made regarding the organizational requirements or structure necessary to implement a formalized Information Resource Management Program for automated information at HQDA. The major premises made and the factors which impact the organizational design are highlighted in Exhibit IX-1, and described in ensuing paragraphs.

(1) The IRM Program Will Impact All HQDA Organizational Elements and Will Have a Widespread Effect on Current Information Resources

Earlier discussions have characterized the HQDA information resource environment. The relationships between the groups within that environment are shown again in Exhibit IX-2. Describing the HQDA environment in this way identifies four distinct communities or points of view related to the information resource. It does not, however, imply four separate organizations. In fact, within HQDA functional areas, each of the communities may report to the same functional chief but receive some HQDA-wide direction in a matrix-type management structure. IRM impacts each community in a unique way. These communities have been defined in these terms during the course of the study. As such, they are not readily identifiable entities in the current HQDA organization. To identify these community relationships and make them operational, HQDA needs to create the IR management organization structure and make some minor organizational changes to existing Staff Agency and DPI organizations to give the remaining communities an identity.

The HQDA IRM Program will require the creation of a formal organizational structure to bring into being the IR management community to support the improved management of HQDA's automated information resources, a capability which does not now exist in a complete sense. This organizational structure will also provide the means by which the current HQDA user, supplier, and handler communities can coordinate their activities to achieve improved information management in their respective agencies. The proposed IRM program organization will need to be structured to:

- Create a high level central office which will:
  - Support the IRM role as a coordinating organization rather than a regulatory organization
  - Give IRM a position of high visibility to assure program effectiveness

Factors Impacting HQDA IRM Organizational Design

- THE IRM PROGRAM WILL IMPACT ALL HQDA ORGANIZATIONAL ELEMENTS AND WILL HAVE A WIDESPREAD EFFECT ON CURRENT INFORMATION RESOURCES
- THE PROPOSED IRM ORGANIZATION SHOULD TAKE ADVANTAGE OF EXISTING HQDA EXPERTISE AND SHOULD BUILD UPON (NOT DUPLICATE) EXISTING ORGANIZATION STRUCTURES ESTABLISHED TO SUPPORT ARMY PROGRAMS
- THE IRM PROGRAM FUNCTIONS WILL NEED TO BE DISTRIBUTED TO ESTABLISH A SYSTEM OF CHECKS AND BALANCES IN MANAGING INFORMATION
- IRM SHOULD BE MADE A PART OF THE WAY HQDA DOES BUSINESS (NOT AN OVERHEAD FUNCTION) BY PROVIDING SERVICE ALONG WITH CONTROLS
- THE INITIAL IRM ORGANIZATION STRUCTURE SHOULD BE FLEXIBLE IN DESIGN TO ACCOMMODATE CHANGES IN SCOPE AND PROGRAM DIRECTION

The Information Resource Community

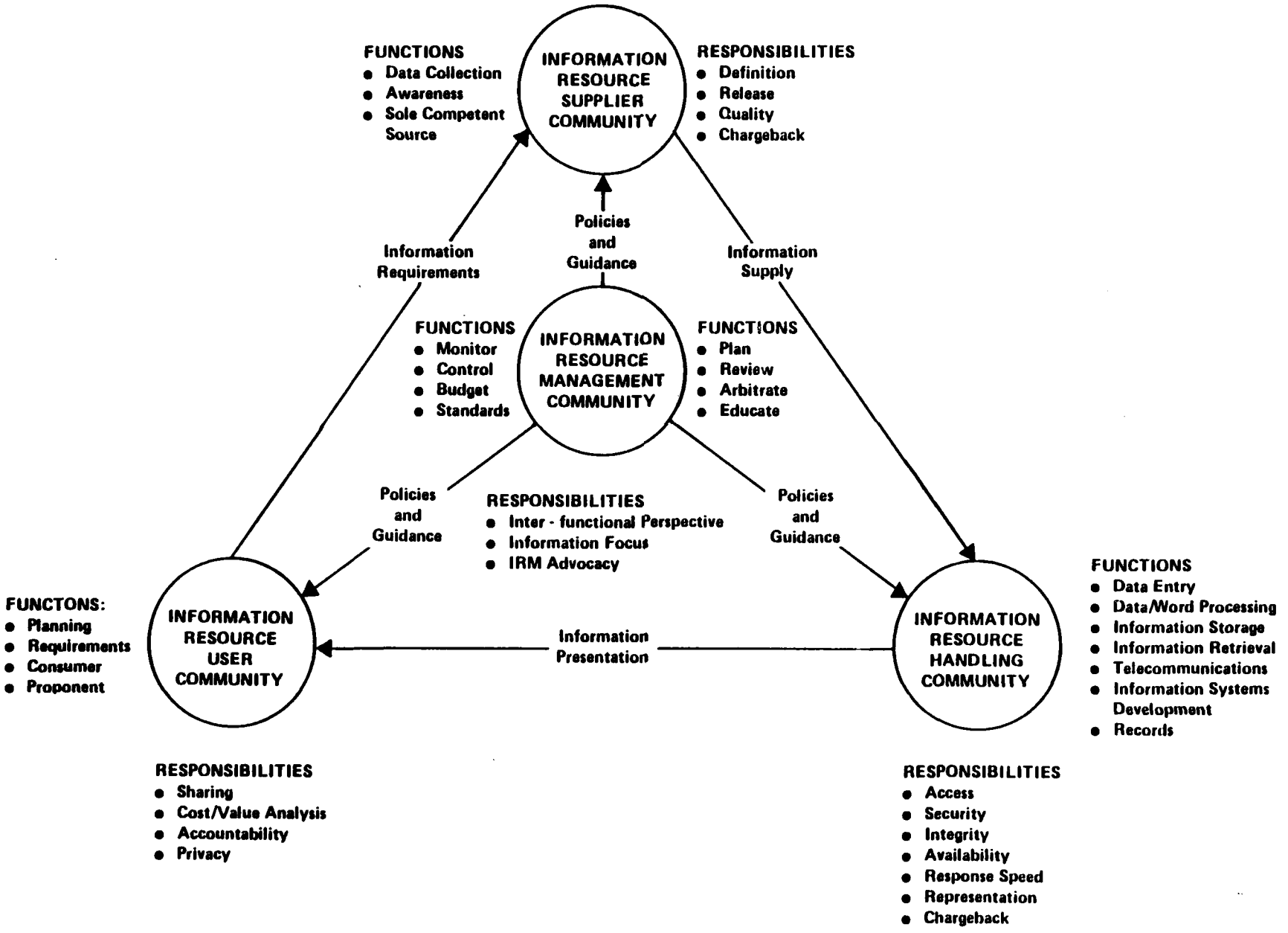


EXHIBIT IX-2

- Provide the authority necessary to ensure its success

. Distribute responsibility for certain functions to selected HQDA Staff Agencies, thereby embedding the program in multiple organizations.

. Extend the IR management community to principals in the Staff Agencies and DPIs by creating a network of individuals responsible for IRM coordination.

. Designate key individuals within Staff Agency user, supplier and DPI handler communities who will be responsible for performing IRM activities in support of the IRM program.

Structured in this way, each of the communities within the HQDA information environment have a specific role to play. As shown in Exhibit IX-2 each community has specific functional responsibilities, and each in its own way impacts HQDA's automated information resource.

The concept of managing information as an enterprise resource cannot be effectively implemented if the approach taken focuses on only one of the information communities to the exclusion of others, e.g., the management community. The IRM program requires a balanced approach, defining responsibilities for each of the information resource communities. The program is intended to generate an enthusiasm and a sense of responsibility distributed across the various Staff Agencies and their DPIs to manage their own information in ways that make it compatible and cost-effective across HQDA. The organizational design must support the concept that identifies and focuses on responsibilities within each of the communities as opposed to vesting responsibility for IRM within a single organization.

Each of the IR communities stands to benefit from the IRM program; however, to gain these benefits, each community must be willing to participate in the program through the performance of their respective roles. HQDA must also be prepared to support the IRM management community in their new IRM program activities on a continuing basis with the commitment of some new resources. This investment will be very modest when compared with the investments already made in the current HQDA handling community, i.e., the 13 DPIs. Likewise, the operating costs of Information Resource Management will be a small fraction of the operating costs currently required to support HQDA's information systems. More effective utilization of the information resource can occur throughout HQDA as each community supports and participates in the IRM program.

(2) <u>The Proposed IRM Organization Should Take Advantage of Existing HQDA Expertise and Should Build Upon (Not Duplicate) Existing Organization Structures Established to Support Army Programs</u>

During Phase I of this study an evaluation of current HQDA information management activities, when compared to defined IRM program activities and functions, revealed that many of the defined IRM functions are currently being performed throughout HQDA, although not uniformly and without an IRM focus. Additional review of current DA regulations, pamphlets and bulletins indicated that certain functions (performed in an IRM context) where already assigned to organizational Management Information Control Officers (MICOs) under AR 335-15 provisions and to HQDA Management Information Systems Officers (MISOs) under AR 18-1 provisions as part of Army programs. The proposed IRM program is designed to take advantage of the organizational positions created in support of current Army programs and to present HQDA an opportunity to interrelate already established organization structures which have been formed more or less independently in the current HQDA environment.

In formulating organizational design alternatives for a HQDA IRM program organization, the intent is to incorporate, where possible, existing organizational entities (such as MICOs and MISOs) rather than propose a completely new organizational structure which could result in redirection, replacement, or disruption of already established mechanisms and practices. Integrating the existing information management structures into the IRM program should raise the overall effectiveness of those structures through the enhanced integration and coordination of individual functions.

During this study these operational programs were reviewed to identify the extent to which they embodied IRM concepts and the extent to which their organization structure could be incorporated in the IRM program. Some of the programs touch upon IRM concepts in a partial sense but are not completely compatible among themselves. An objective of the HQDA IRM Program is to build upon these DA programs rather than create new HQDA programs in support of IRM which are parallel with current DA programs or which are duplicative in nature. Wholesale restructuring of existing DA programs is neither required nor practical to achieve the goals of IRM. Because these programs required individuals to perform IRM related tasks at all levels within HQDA, positions and functions have been spread throughout HQDA. These organized networks of Forms, Records and Reports officers, MICOs, MISOs, and AMOs will permit the Agencies and DPIs to implement IRM by redirecting current efforts or through job enlargement actions. The IRM program concept essentially requires increased coordination of these programs with other IRM functions.

(3) <u>The IRM Program Functions Will Need to be Distributed to Establish a System of Checks and Balances in Managing Information</u>

In organizations as large as HQDA, where information demands cross functional lines, and where significant resources are currently committed to information support, there is a need for a specialized organization to effect the high degree of coordination required for achieving both effectiveness of use and efficiency of cost regarding information. A central management structure is needed to provide IRM policies, leadership, resources, and support. The IRM program organization needs to provide both vertical and horizontal linkages among HQDA staff functions, and should be structured to facilitate the communication of guidance and consultation to the individual staff organizations.

Caution is necessary so that the administrator of a central management function is not perceived as a "data czar". Under the distributed concept, there will not be a data czar, or a single organizational element which controls who gets what information. Agency Heads will still determine what data they need and what resources they must commit to its collection, processing, and distribution. The IRM program embodies a democratic but not strictly voluntary process in which responsibilities for information sharing and cost control are encouraged from a HQDA perspective. While a "data czar" is not required, some form of central program coordination will be needed for program success.

Two additional factors naturally inhibit the placement of total responsibility for IRM program management in any single agency: the magnitude of the HQDA information resource and, organizational precedence which has already established responsibility for some IRM functions in both the Offices of the ACSAC and TAG. Single agency management, control, direction, and execution of all the IRM functions is impractical and organizationally unwise given the scope of HQDA's information resource and existing functional responsibilities and workloads.

The organizational design will need to establish a balanced environment through a deliberate placement of functions, i.e., placing audit functions with audit activities, assigning management and control functions to management groups, and user functions to user groups. In such a distributed "democratic" environment, there will need to be established certain checks and balances to ensure a viable program. These check and balance mechanisms are built into the program through:

- The establishment of an appeals process whereby policy decisions can be challenged (i.e., the governed have an input to the process)

- The representation of all the IR communities on the IRM steering committee to offset the power and authority of the IR management community

- The assignment of user, supplier, and handler responsibilities to counterbalance irresponsible freedom regarding information.

Under the IRM concept, no single community is permitted excessive authority or power; each is given a set of responsibilities with the appropriate authority it needs to be effective.

(4) IRM Should Be Made a Part of the Way HQDA Does Business (Not an Overhead Function) by Providing Service Along With Controls

Past approaches to providing HQDA management with information were often viewed as data processing support responsibilities, and subsequently were given little attention by management or undertaken with limited enthusiasm and minimal participation by user groups. In many instances important systems design issues and related information issues may have been resolved by ADP personnel, without a management perspective. Perhaps the urgency of the situation required compromise to get the system operational quickly. As a result, some systems were developed which were not compatible with other related systems, were designed using non-standard data elements, or were poorly documented in design phases making maintenance and enhancement extremely difficult and costly. Many of the extra steps that should have been taken during development were bypassed or shortcut, in part, because they were viewed as "overhead" activities.

The IRM process focuses on the information itself, in conjunction with the systems aspect. IRM concepts are intended to be applied throughout all system life cycle phases as opposed to any particular singular phase such as systems design, or systems development. Viewed in this way, everyone at HQDA, not just systems designers, has responsibilities for information related functions. The IRM program, through an education and awareness approach, seeks to embed IRM practices in everyday operations in which information is acquired, processed, stored, and disseminated. IRM is fundamental to everyday user and handler activities, and not just a program on which they will someday be required to report status.

The IRM program serves multiple purposes and is designed to provide a wide range of support to the users, suppliers, handlers and managers of information. For example, through the use of Information Resource Directories provided by the Metadata Management Function, Action Officers and other users of HQDA automated data will be able to locate and identify the contents of HQDA's data resources more efficiently. Once locations for information are established, users will be able to query agency dictionary systems to identify data sources at the data element level, and will be able to trace data element use in applications,

systems and data bases. Users will be able to query reports inventories that describe report contents in various ways, thus allowing individuals to determine existing sources for data in already established reports. In this way report reutilization can occur, often at considerable cost savings.

The Handler Community, especially the DPIs, will benefit by the service nature of IRM, as well. In performing system design functions, systems analysts/programmers will find information resource directories and data dictionaries valuable when verifying data element standards, definitions, uses, etc. Operating procedures which require the transfer of metadata information for all record, file, and data base interchanges will facilitate processing and reduce requirements for special handling and conversions in many cases. Coordinated design efforts, employing standard data element names and definitions, will facilitate enhanced sharing and use of data.

The suppliers of information within HQDA will benefit from the service aspect of the IRM program, as well. One aspect of IRM stresses the formal identification of user requirements for information, which, when documented, assists the suppliers in knowing what information is needed. The awareness of what is needed, supported by higher levels of coordination between the suppliers and users of information, makes it easier for the suppliers to satisfy user demands. HQDA benefits overall when information can be obtained from existing systems rather than collecting it separately or independently. An eventual goal of IRM is to support the management of information through improved distribution and accountability for information costs. Accordingly, the focus on both users and suppliers will allow a more equitable distribution of costs between the two. Currently most of the costs associated with producing information are borne by the suppliers and handlers of information, more so than the users of information.

The IRM program management community will have a number of tools available to serve them in coordinating the program across HQDA. A formalized IRM policy structure will provide a framework in which information practices are uniformly followed and applied. The management community will be responsible for the design, development and implementation of the Information Resource Information System (IRIS), an integrated capability, designed to provide feedback information which will allow program monitoring and control to take place. Through participation in and leadership of the IRM Steering Committee the management community will have a direct interface with the other communities on all IRM matters.

Under the IRM Program concept, the collective participation of individual efforts will result in multiple benefits for all organizational elements throughout HQDA, e.g., faster response to

information queries, cheaper costs, better utility of information, better understanding of what each agency's resources are, better planning and allocating of information resources, reduced waste of time, money and personnel, and better information decisions.

Because the IRM program will impact [illegible] in HQDA, the organizational design must make the organizational structure visible throughout HQDA. The design must assign responsibilities to the distributed organizational entities and provide the entities with capabilities to allow them to function as service organizations.

(5) The Initial IRM Organization Structure Should be Flexible in Design to Accommodate Changes in Scope and Program Direction

Our study has been limited to automated information in HQDA systems, and its management as a resource. Therefore, our initial IRM program organization has been designed to support the improved management of HQDA automated information. We recognize the importance of eventually extending the IRM program beyond automated information and beyond HQDA to the Army at large. Our initial organizational design has incorporated the potential for expanding the organization, or even relocating it, as future program extensions occur.

As the HQDA IRM program for automated information matures, members of HQDA will develop a broader organizational understanding of IRM. Opportunities may arise to extend the IRM program concepts beyond automated information to include other information resources, e.g., word processing, paper work administration, micrographics, etc. While these extensions of scope will not occur immediately, they can be expected to emerge over time. When these movements evolve, and as certain program extensions occur, HQDA may want to create new functions, consolidate others, or migrate responsibilities to enable it to retain continuity and still effectively manage its information resources. The organizational design for implementing IRM at HQDA has taken these potential changes into account, and thus is designed to be flexible enough to accommodate changes expected in the future.

2. ORGANIZATIONAL ISSUES

A recommendation made at the conclusion of Phase I of the study was that HQDA follow a distributed approach in implementing IRM. The distributed concept requires some elaboration to clarify the term and to fully convey its meaning.

There are two aspects to the "distribution" of IRM at HQDA. The first, addresses the nature of how the IRM program functions will be executed and made operational by a widespread distribution among the

identified supplier, user, handler, and manager communities, in such ways that each community is assigned explicit roles, functions and responsibilities for implementing IRM. The balanced distribution of roles and responsibilities among the four groups should provide HQDA an information resource that is both effective and cost efficient.

The second aspect of "distribution" describes the way in which the management of the total IRM program is distributed among the IRM Administrator and selected Staff Agencies. By distributing the program management functions, the program management load can be spread across several groups for improved effectiveness. The rationale underlying where these functions should be distributed, what levels of responsibilities should any organization fulfill, what new resources will be required, etc., are subjects discussed in greater detail under each of the issues which follow.

The IR Management Community, as described earlier in the report, implies: the establishment of an Information Resource Management Administrator and an IRM Steering Committee; centralization of information policy the distribution of IRM functional programs to appropriate HQDA Staff Agencies; and the designation of IRM principals within the Staff Agencies. In assessing the impact of IRM upon the HQDA environment several important issues have been identified which relate to the organizational implications of IRM upon HQDA. The organizational issues addressed are:

- The IRM Administrator (IRMA) should be placed sufficiently high within HQDA for maximum effectiveness
- The IRM functional programs should be distributed to selected HQDA Staff Agencies for maximum effectiveness and minimum disruption
- The IRM Steering Committee should be a high level committee and represent widespread HQDA interests
- Current HQDA programs and resource constraints will impact the effective implementation of the HQDA IRM Program

Each of the issues is discussed in greater detail in the paragraphs which follow.

(1) <u>The IRM Administrator (IRMA) Should be Placed Sufficiently High Within HQDA For Maximum Effectiveness</u>

Many options exist for placement of the IRMA function within HQDA, e.g., within the Office of the Chief of Staff of the Army; at various locations at the General Staff level; at various locations at the Special Staff level; within a separate Field Operating Agency; and, within a HQDA DPI.

Several factors which influence the placement of the IRM Administrator are:

- Top management's expectations of the IRM Program
- The distributed management approach to IRM
- The magnitude of resource expenditures currently allocated to collecting, processing, storing and distributing information within HQDA
- The current nature of the HQDA's approach to resource management

The importance of these factors are elaborated in greater detail in the following paragraphs.

Typically top management in HQDA, as in other organizations, desires to aggregate and summarize data from its suborganizations to arrive at a single organizational position or statement. This way of managing information has certain implications. Top management levies information requirements based on what it knows about data that already exists. However, it can levy requirements when it does not know what exists, causing extensive redundant data collection, processing, and transmission by its staffs. In other instances, where top management is unaware of organizational data holdings it may not ask for data which is available. This may result in decisions being made with insufficient data, increased data production costs, data being collected but not used, etc. To the extent that these problems exist, and where top management is directly affected, location of the IRM function near top management has many advantages.

The HQDA distributed approach to IRM is characterized by a small central office for program direction (IRMA) and a distribution of IRM functions throughout HQDA. Two factors which can influence the choice of location for the IRMA are: the need for visibility required to support the IRMA's advocacy role for IRM and the need for authority to support the IRMA's assigned responsibilities as a HQDA-wide coordinator for information management. In supporting the role as the advocate of IRM at HQDA, the IRMA must: promulgate the IRM philosophy throughout HQDA to make IRM an integral part of HQDA's management approach; develop policies and procedures to manage a formal IRM program; and, foster the development of a set of tools to assist in the operational aspects of the program, as a minimum. The IRMA must lead HQDA into IRM and, in doing so, encourage all HQDA to willfully participate in the program. In carrying out these functions the IRMA will be implanting a management discipline within the Staff Agencies and their DPIs in the form of policies, procedures, and guidelines aimed at maximizing the effectiveness and minimizing the costs of information. The IRMA will also take

the lead in addressing and resolving HQDA-wide information issues. In order to be most effective, the IRMA must be organizationally placed to give it the high visibility it needs to support its strong advocacy role.

HQDA currently commits extensive resources to handling its data. In managing information as an enterprise resource a balance must be achieved between effectiveness and efficiency. An assumption can be made that resources committed to producing effective information are limited in nature, and will be in the future, as costs for acquiring and consuming the information resource continue to rise. Since all HQDA resources are currently limited, cost becomes a predominant factor in managing the information resource. Conversely, the demands for better and more information are increasing rather than declining.

When resource constraints are imposed, contention for resources arises, often creating a need for arbitration or negotiation in allocating the resources. In HQDA, information issues will surface when conflicts arise over information priorities and information costs. The IRM program assigns an arbitration role to the IRMA for the resolution of information issues. To be effective in this arbitration role the IRMA must:

- Be placed high in the organization to have the authority to exercise this role
- Be in a position to influence the members of HQDA to participate in the program
- Have a broad perspective to act in the interests of HQDA as a whole, and to act in support of the interests of the individual Staff Agencies as well.

The foregoing factors were key considerations which influenced the final placement of the IRM Administrator in the recommended organizational design for implementing IRM.

(2) <u>The IRM Functional Programs Should be Distributed to Selected HQDA Staff Agencies for Maximum Effectiveness and Minimum Disruption</u>

The impact of distributed IRM functions will not be uniform throughout all the Staff Agencies and DPIs. Each will need to adhere to the same policies and execute the same IRM functions, however, the level of activity per IRM function may vary, depending on the size and nature of the DPI or Staff Agency. Further, those agencies and DPIs which are currently performing IRM activities will incur a lesser conversion impact than those not now performing them.

The impact of distributed IRM functions is somewhat different within the IR management community. There, certain IRM related functions are already being performed as organized programs (e.g., forms, records and reports management, data standards, and information systems reviews). There is, then, precedence for keeping those IRM functions assigned where they currently reside. Of prime concern in the study was the analysis to determine if there are other factors which might influence moving the functions to another Staff Agency. The program organization alternatives address the current placement of these functions, the possible reassignment of existing functions, and the placement of new functions.

The impact of IRM upon diversified HQDA Staff Agencies and supporting DPIs will vary widely based upon the individual progress each organization has made to date in initiating IRM functions. As stated earlier, some agencies and some DPIs have already organized to achieve improvements in managing their information resources through the establishment of data administrators, construction of data bases, etc. In such cases these organizations may not have to make significant new or additional resource commitments to support IRM. Since the level of impact is extremely difficult to quantify, the approach we recommend is to suggest models for organization for the Staff Agencies and DPIs to support IRM. In that way those organizations which have already adopted IRM practices will have greater flexibility in organizing for a more comprehensive IRM program and will not be required to conform with an externally developed organizational structure. Since the level of resources required and the magnitude of effort will differ among the Agencies and DPIs, self-evaluation or self-assessment is deemed most practical in determining how best to implement IRM.

The distributed approach to implementing IRM does not grant nor imply complete freedom of action to Staff Agencies and DPIs in implementing individual IRM programs. The IRM concept provides a degree of flexibility for the respective Staff Agencies to develop IRM programs which meet their internal needs. However, the IRMA is expected to develop certain minimal guidelines to assist the Staff Agencies in their implementation of IRM, e.g., suggest a minimum staffing requirement within each agency to support the continuity of a HQDA-wide program. Further, while the concept promotes an atmosphere of cooperation and encourages Staff Agency participation for their individual and collective good, certain aspects of the program, e.g., planning for information, reporting of metadata to update the HQDA Information Resource Directory, etc., will require mandatory participation if the IRM program is to be successful on an overall basis in HQDA.

(3) The IRM Steering Committee Should be a High Level Committee and Represent Widespread HQDA Interests

The role of the proposed IRM Steering Committee and the functions it would perform were defined in Chapter V. There currently is no central forum to address information issues at HQDA. The proposed IRM steering committee can serve as a forum for all information issues, while concentrating initially on automated information in the IRM program. The organizational issues concerning the IRM Steering Committee address the questions of whether a new committee should be formed and what the composition and placement of the IRM Steering Committee membership should be.

Even though the initial focus of the HQDA IRM program is automated information, the proposed IRM Steering Committee is needed to perform functions which focus on HQDA information related issues rather than strictly automation issues. In so doing it will address information policy considerations, IRM program objectives, and subjects such as information representation, content, ownership, and quality.

All IR communities, i.e., suppliers, users, handlers, and managers, of the automated information resource, will benefit from representation on the IRM Steering Committee. Since most information issues that can be expected to arise will have a pervasive impact on all of HQDA, members of all interested and affected groups will have a voice, through representation, in problem resolution. Definition of the Steering Committee membership must take this balanced representation into account.

A final issue regarding the IRM Steering Committee concerns its placement for maximum effectiveness. Two alternatives evaluated included establishing an independent committee or assigning it as a sub-committee to some existing body, e.g., the SELCOM. In this regard, the IRM program is seen to be an integral part of the operational decision-making and resource management activities of HQDA and quite naturally fits in with the current HQDA committee structure.

(4) Current HQDA Programs and Resource Constraints Will Impact the Effective Implementation of the HQDA IRM Program

Current resource constraints will have an impact upon the level of commitment that can be approved for implementing IRM at HQDA. The impact can be minimized in some ways, in that many of the IRM functions are currently being performed in some agencies and DPIs. However, the IRM concept introduces many new activities and functions at all levels throughout HQDA, and some new resources must be committed to the program (these are elaborated in greater detail in Chapter XI). The primary resource areas which impact the effectiveness of the IRM program are:

- Current HQDA resources policy

- Difficulty of obtaining new position authorizations
- Shortage of qualified IRM personnel
- An anticipated HQDA organizational learning curve.

Current Federal budget policies are continually imposing resource limits on all Federal agencies, especially in the personnel area. Therefore, every effort has been made to curtail the requests for new resources, and to evaluate ways of reallocating resources in implementing the initial IRM program for HQDA. Under current policy, any new position requirements will undergo heavy scrutiny prior to authorization. Any new position requirements should be held to the absolute minimum deemed essential to the program's success. For this reason, and others, such as the current shortage of IRM trained personnel in the market place, and the long learning curve HQDA will experience, an incremental approach to program implementation will be required. Early program resource commitments will need to be minimal and additional resources will need to be phased over several years. As the program benefits accrue, manpower savings should result to offset or reduce new program resource requirements.

Because tight budgets and strict controls are a way of life today, HQDA must organize to assure that its information resources are used wisely and well.

3. CONCEPTUAL MODEL FOR IRM COMMUNITY

The discussion of the factors and issues related to the IRM program organization have surfaced the need for an organization which will:

- Support the widespread impact of IRM on HQDA
- Build upon existing organizational structures
- Incorporate a distribution of functions and responsibilities
- Provide a valuable service to HQDA decision-makers as a minimum.

The recommended HQDA organizational design is based to a large extent upon a functional model of the HQDA Information Resource Management Community as shown in Exhibit IX-3. Reflected in the model are the members of the IR Management Community with their associated functional responsibilities (in summary form). The central member is the IRM Administrator who is assigned overall responsibility for the program. Selected Staff Agencies are designated as HQDA IRM Functional Program Managers for one or more of the 10 IRM functional programs.

HQDA Information Resource Management Community

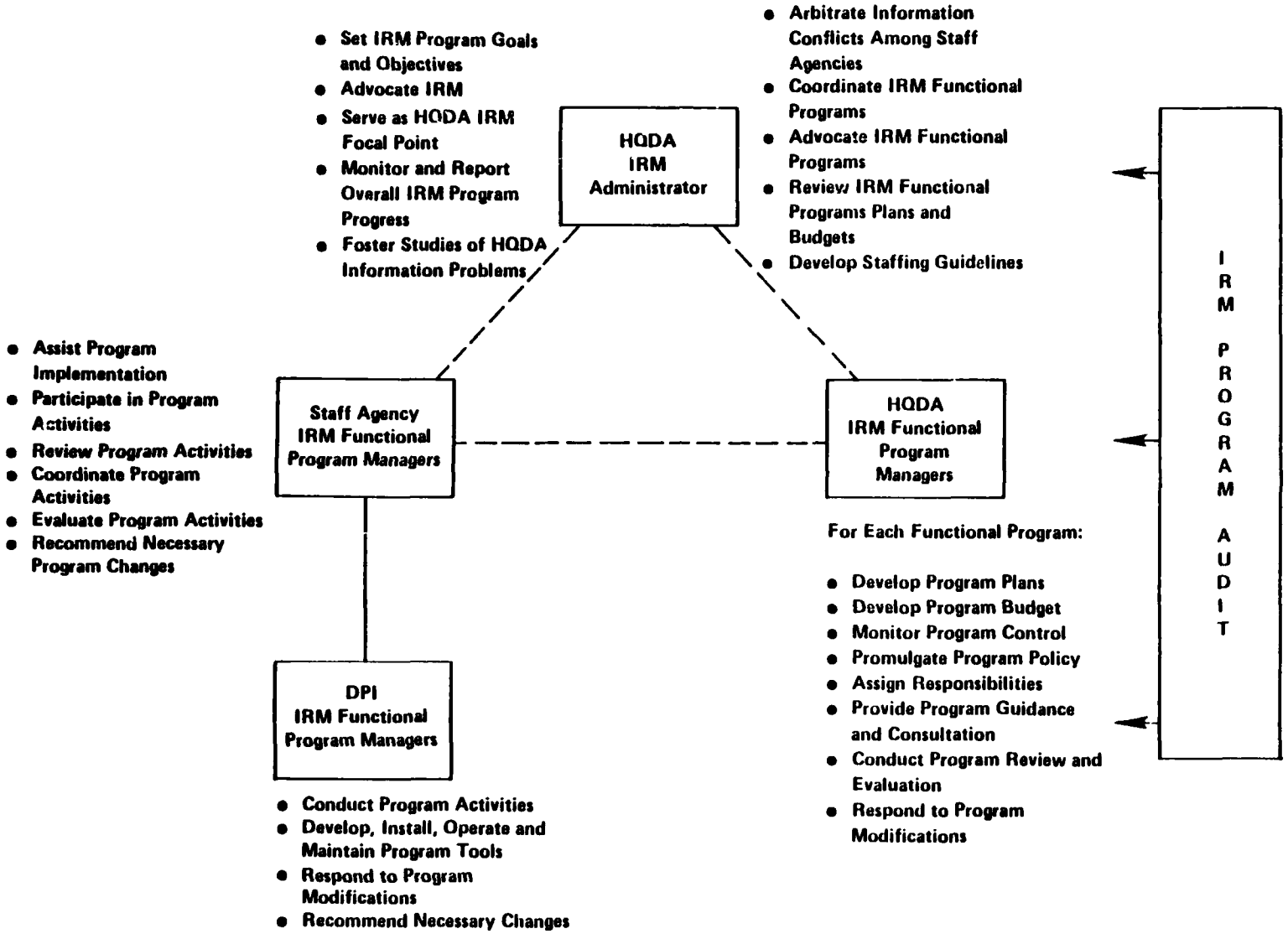


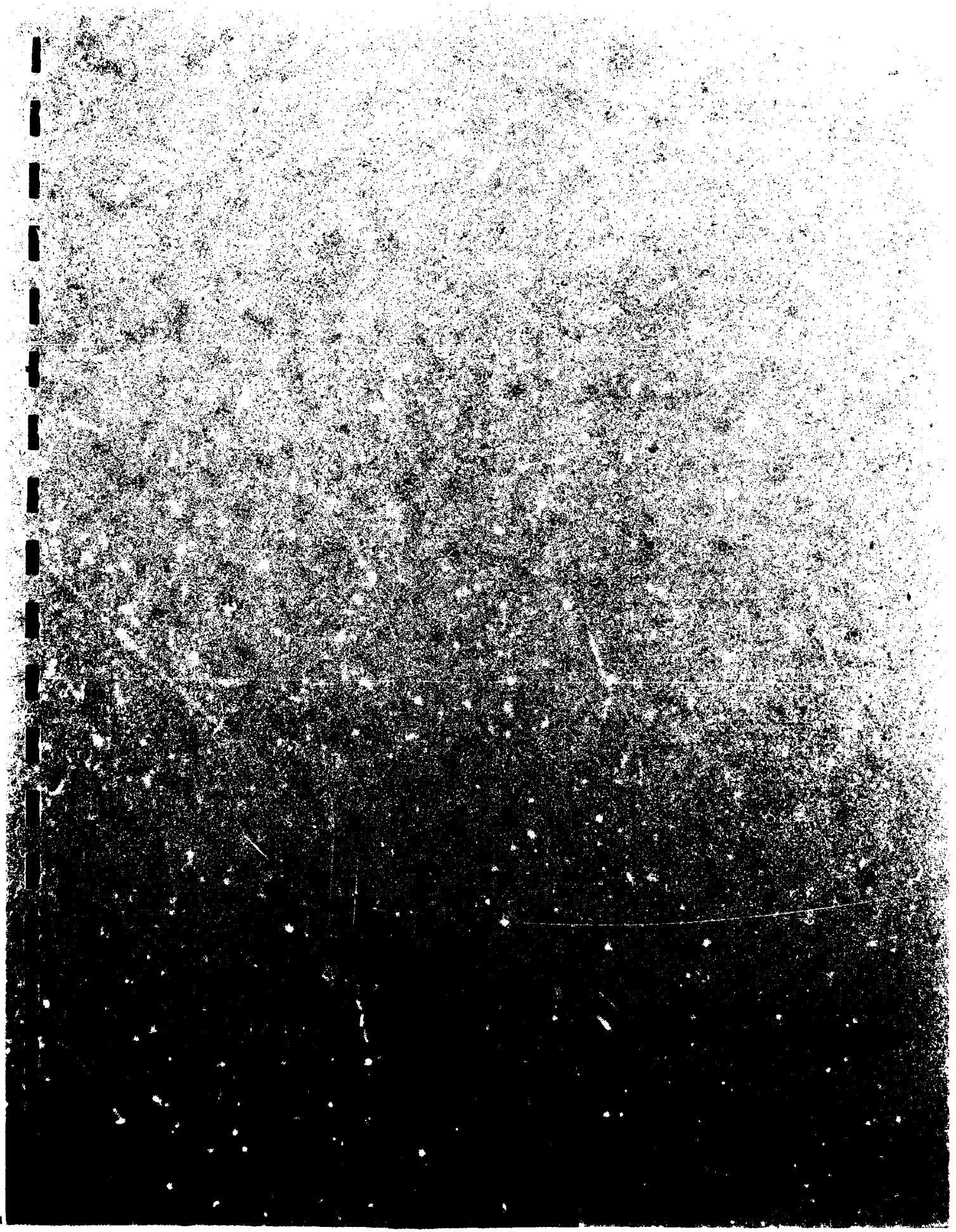
EXHIBIT IX-3

Within each HQDA Staff Agency some individuals are assigned responsibilities for executing the IRM functions within the Staff Agencies themselves. As required, the DPIs will also designate individuals responsible for execution of IRM functions within the DPIs. This model creates an organizational structure, a hierarchy, which allows the IR Management Community to permeate HQDA and extend down to its DPIs.

The IRMA is not envisioned as having direct line management authority over the HQDA IRM Functional Program Managers, or the Staff Agency IRM Functional Program Managers. Rather, its relationship to other members of the IR management community follows a matrix management approach which provides guidance, direction and support. All of the IRM supporting organizations report formally to their Agency Head.

To support the IRM program the organizational structure needs sufficient authority for success in HQDA which implies high level placement. Likewise, as a new program, it needs the visibility that it can achieve from such placement. Another factor which influenced the design was the need for a coordinating mechanism which can integrate existing HQDA programs with the IRM program. Lastly, because of a scarcity of resources, the recommended organization draws upon existing organizational structures wherever possible.

The factors and issues which underly the IRM program organization design were presented in this chapter to provide the reader an overview of the many considerations which were made in formulating the IRM organizational recommendations. The proposed IRM organization design which incorporates these factors is presented in the next chapter.



X. PROPOSED HQDA IRM ORGANIZATION

In order to manage information as a resource in HQDA two things must happen. First, HQDA must make an explicit statement of the organization's information management objectives and policies. Second, it must put in place a system for implementing the policies, for measuring their effectiveness, and for providing management feedback necessary to modify and change policy when necessary. These two entities, when combined, are the IRM program. The central theme behind implementing an IRM Program for HQDA emphasizes organizing the entire information resource environment for better coordination of activities which support information management.

The concept of IRM distributes responsibility for execution of certain IRM activities and also distributes management of the program. In particular, responsibility for management of the IRM program is distributed within the Information Resource Management Community and responsibility to abide by the IRM program policies and principles is threaded throughout the Staff Agencies and the DPIs. The larger responsibility for the management of information in HQDA is distributed throughout HQDA and becomes a matter of concern for all managers, users, suppliers, and handlers of information.

In this chapter we present the recommended organizational structure which HQDA needs to establish to support implementation of the IRM program. There are two sections in the chapter;

- Proposed Organization of the HQDA Information Resource Management Community
- Proposed Model for Staff Agency Organization for IRM.

We believe these organizational recommendations will allow HQDA to implement an IRM program with the least disruption of current activities.

1. PROPOSED ORGANIZATION OF THE HQDA INFORMATION RESOURCE MANAGEMENT COMMUNITY

Currently ACSAC, TAG, CSC, Staff Agencies, DPIs, and others are all doing bits and pieces of IRM. However, since no formalized information resource management organization currently exists at HQDA and because IRM will have a pervasive impact on HQDA organizations, a program management structure is essential. Within such a structure the IRM program concept calls for program oversight and steering activities; an overall program administration; and the distribution of IRM functions. HQDA needs to establish this Information Resource Management Structure to focus on the management of the IRM program.

Arthur Young and Company's organizational recommendation for the HQDA IRM Program Management Community, based upon the functional model introduced in Chapter IX, is shown in Exhibit X-1. The organizational design incorporates existing HQDA elements: the DAS, SELCOM, ACSAC, TAG, and IG/AAA. It creates two new entities: the Office of Information Resource Management (OIRM) and the IRM Steering Committee. The IR Management Community extends out into the Staff Agencies, as well, through IRM program principals designated by the Staff Agencies. The roles/responsibilities of each of the organizations are described in following sections.

(1) The Office of Information Resource Management (OIRM)

The OIRM will support the Information Resource Management Administrator (IRMA). Creation of this office, appointment of the Information Resource Management Administrator, and authorization of a minimal supporting staff will:

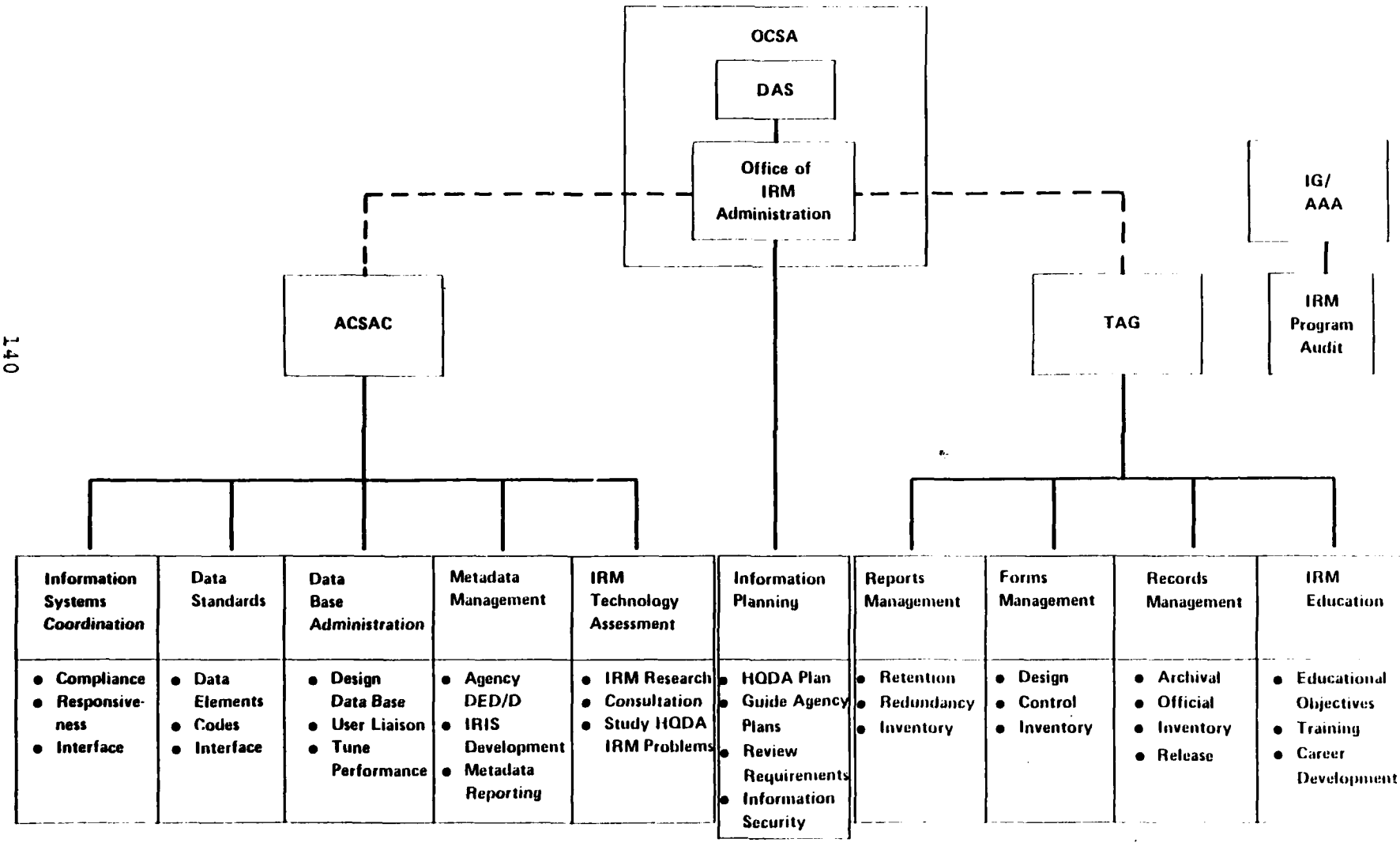
- Identify and designate an advocate for the IRM program responsible for a horizontal view of information across HQDA
- Create a single office and assign responsiblity for managing information as a resource to the HQDA Information Resource Management Administrator
- Give the program an authority base to support HQDA coordination responsiblities
- Give CSA a single voice with which to direct HQDA information activity.

By consolidating these responsibilities in the OIRM, HQDA can achieve a coordinated IRM program through improved central direction and guidance. In organizing the IRM program in a distributed way, the OIRM can be held to a manageable size, retaining only key functions. The remainder of the important IRM functions are assigned to other elements of the Army Staff.

The IRMA is assigned responsibility for overall IRM program management. The IRMA will also provide coordination of IRM functional program management, will retain the IRM functional program responsibilities for Information Planning, and will set IRM Policy for HQDA. Within the function of Information Planning, the IRMA will be responsible to assure that information security policies contained in AR 380-380 are followed.

The internal organization structure of the Office of Information Resource Management is shown in Exhibit X-2. Brief descriptions of the activities to be performed by the IRMA and the individual support units within the OIRM are presented below.

HQDA IRM Program Placement



HQDA Office of Information Resource Management

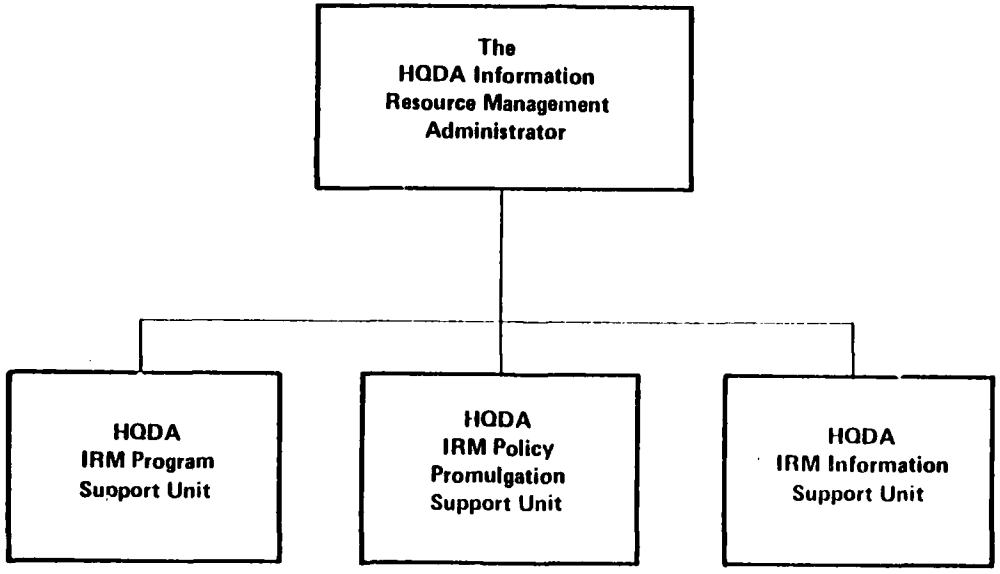


EXHIBIT X-2

- HQDA IRM Administrator (IRMA)

  The IRMA is envisioned as the overall IRM program manager, and is, therefore, responsible for all IRM activities on a HQDA-wide basis. In that regard he will have several responsibilities, which will include as a minimum: setting IRM goals and objectives; advocating IRM; serving as the HQDA focal point for IRM; monitoring and reporting overall IRM progress; arbitrating information conflicts among the staff; and IRM functional program coordination.

- HQDA IRM Program Support Unit

  This unit within the OIRM is designed to provide staff support to the IRMA in the execution of the IRM Program. The support staff, through the IRMA, exercises HQDA-wide functional authority over IRM matters and provides the IRMA with general program support to include:

  - Planning for IRM programs when the scope is HQDA-wide, such as establishing new programs or drastically revising current programs. Often this planning may be shared with staff agency task forces convened by the IRMA.

  - Reviewing HQDA IRM functional programs in order to optimize performance. The support staff will develop evaluation criteria and procedures as well as identify areas in which reviews will have the greatest payoff.

  - Coordinating IRM program activities with other organizations, both internal and external to HQDA. These activities include idea exchange, new program proposals review, and impact analysis of new external data requirements before they are levied on Staff Agencies.

  - Serving as liaison coordinator for IRM with the Federal oversight agencies, e.g., OMB, GAO, GSA, in matters related to administration of new and emerging Federal IRM programs and legislation. The section will see to the designation of HQDA liaison officials from among the IRM Functional Program Managers, as appropriate, to adequately represent the Army's interest and to keep abreast of new developments.

- HQDA IRM Policy Support Unit

  This unit will retain responsibility for promulgation of new IRM policy, and revision and revocation of current IRM policy for the HQDA IRM Program. While the unit will concentrate on policy issues which have program-wide

impacts, it will delegate to each of the Functional Program Managers responsibility for policy development within their program area of specialization. The unit will review and coordinate policy recommendations of the Functional Program Managers. Many new policies will be developed by interpreting new legislation and regulations. The IRM policy staff will analyze new requirements, design policy and procedures changes, and oversee policy implementation. Policy changes will be introduced through established HQDA mechanisms.

- HQDA IRM Information Planning Support Unit

  Because of the important impact that HQDA information planning has upon the staff, the IRM functional program of Information Planning has been assigned to the IRMA. The Information Planning Support Unit performs two roles: it is responsible for developing HQDA-wide information planning policy and guidance to support uniform HQDA staff agency information planning processes; and, it performs the operational activity of collecting, reviewing and integrating individual agency information plans into an overall Information Plan for HQDA for presentation to CSA. The overall plan will become the basis for funding and budgeting the IRM Program, and serves as an approval mechanism for coordinating individual Staff Agency information plans.

Many factors were considered in evaluating and selecting the location for placement of the IRMA. The preliminary analysis addressed the placement of IRMA at three levels of HQDA:

- OCSA
- General Staff
- Special Staff

Placement at lower levels, such as within a Field Operating Agency or within a HQDA DPI, was not deemed feasible because of the important, pervasive nature of the IRM Program. The advantages and disadvantages of placement within each level of HQDA are summarized in Exhibit X-3. It was determined that the IRMA should be placed at the OCSA level for the following major reasons:

- It consolidates the IRM policy and planning staff with similar HQDA management functions, i.e., programming and budgets (PAED) and planning and management (MD), to provide more comprehensive policy and planning functions for HQDA
- Treating information as a resource, and managing it as such, will have an enormous impact on all of HQDA and on how HQDA

Possible Placement of IRM Administrator

LEVEL	ADVANTAGES	DISADVANTAGES
SPECIAL STAFF (TAG)	• Several IRM-Related Programs Already in Place • Focus Beyond Automated Information • Established Organizational Structure Throughout Army • Organizational Understanding and Enthusiasm for IRM	• Limited Enforcement Capability • HQDA Perception as Paperwork Manager • Current Limited Role With Automated Information
GENERAL STAFF (ACSAC)	• Several IRM-Related Programs Already in Place • Army-Wide Orientation • Technical Expertise for Automated Information • Organizational Role Still Being Molded	• HQDA Perception as Computer, Communications Equipment Manager • Potential for IRM to be Obscured by Automation/ Communications Focus • Limited Extension to Non-Automated Information
GENERAL STAFF (COA)	• Organizational Responsibility for Resource Management Policy • Army-Wide Orientation • Familiarity with Management Language Problems • Historical Role Related to ADP	• Potential for IRM to be Obscured by Financial Management Focus • Limited Staff Experience in Information Management
OFFICE OF THE CHIEF OF STAFF (OCSA)	• HQDA Orientation • Visibility for IRM Program • Established Role as Arbitrator Among Staff • Precedent for Placement of New Programs	• Constraints on Size of OCSA • Limited Extension Beyond HQDA • DMIS Connotation

EXHIBIT X-3

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plans for and utilizes the resource. The coordination of this activity requires central direction from a single office which can provide a HQDA-wide perspective and also provide continuity between the distributed IRM functions

- Placement of IRMA within OCSA gives the program high visibility and exhibits top level management commitment to the program
- A top-down perspective is needed to implement IRM concepts in a large organization like HQDA where significant resources are currently committed to information handling
- The OCSA has traditionally performed the role as arbitrator in resolving conflicts among the staff
- There is precedence for initiating new programs through the OCSA.

Creation of a small central office within OCSA will provide a capability to support cross-functional coordination, deemed vital to the success of the program. Several alternative choices were considered for the placement of IRMA within OCSA. The primary alternatives were to locate IRMA in the offices of the:

- Director of the Army Staff (DAS)
- Director of Program Analysis and Evaluation (PAED)
- Director of Management (MD)

or to create:

- A new Office of Information Resource Management (OIRM)

A summary of the advantages and disadvantages of locating the IRM Administrator in an existing OCSA office or creating a new office within OCSA are shown in Exhibit X-4.

We recommend the creation of a new office to report directly to the Director of the Army Staff to administer the IRM program. This recommendation is based on the following:

- The new office will focus on information, a commodity extremely vital to managing the Army in today's environment, and its creation demonstrates the importance of treating information as a resource
- Assigning the OIRM to report directly to the DAS demonstrates top level commitment to the program and gives it visibility. Top level support is essential for the success of the program which is intended to improve information management at all

Possible Placement of IRMA within OCSA

DIRECTORATE	ADVANTAGES	DISADVANTAGES
Director of the Army Staff (DAS)	• Visibility • Authority • Established Arbitration Role • Strong Advocate of IRM	• Demands of IRMA Role May Force Delegation to Immediate Subordinate • Need for Direct IRM Support Staff
Director of Program Analysis and Evaluation (PAED)	• Established Role as HQDA Planner • Established Mechanism for Resolving Resource Conflicts	• Potential to Limit Focus on Program/Planning Information • Potential for IRM to be Obscured by PPB Pressures
Director of Management (MD)	• Focus on Mangement Policy and HQDA Goals • Inter-Functional Orientation • Current Initiative on CSA Data Base	• Competition for DM Attention • Limited Staff Experience in Automation and Information Management
Office of Information Resource Management (IRMO)	• Information Focus • Demonstrated Commitment • Concentration on IRM • Long-Term Involvement • Flexibility for Growth	• New Position May Require Approval • Program Growth May Require Program Migration

levels in HQDA, and ultimately improve the quality of information prepared for top level management.

- The essence of the role of the DAS is to ensure that all opinions or views, negative as well as positive, on important topics are surfaced. In doing so, decision making can occur in an unbiased setting.

- Other offices within OCSA have previously established primary areas of concern, therefore, we believe a new office is necessary which addresses information management as its primary mission.

- The full impact of IRM and the benefits to be derived will occur over the long-term. The creation of a specific office to support the program is necessary to provide on-going coordination and continuity for the program within HQDA.

- An independent office offers certain advantages regarding future evaluations as growth and changes in program scope warrant. Resources committed can be evaluated independent of other programs and functions. The potential exists for later migration of the IRM office with its resources to General Staff or Special Staff status if appropriate.

The creation of the Office of IRM establishes a small nuclear staff to lead HQDA in a program to more effectively utilize and manage information in HQDA while concurrently attempting to reduce information costs.

(2) OACSAC Office of IRM Program Support

The OACSAC will play an important role in the implementation of the IRM program at HQDA. We recommend OACSAC be assigned the following IRM functional programs:

- Information Systems Coordination

- Data Standards

- Data Base Administration

- Metadata Management

- IRM Technology Assessment.

Of these, the Information Systems function and the Data Standards function have already been formalized into Army programs for Army-wide implementation. OACSAC is currently the Agency responsible for policy and guidance in these areas and exercises program management and oversight responsibilities to direct the programs. ACSAC should, therefore, be given responsibility for

the IRM aspects of these two functions and take the steps necessary to integrate the IRM program concepts to make these existing programs compatible with other IRM program functions.

In the areas of Data Base Administration, CSC has been assigned responsibiliies for evaluating DBMS packages, and evaluating data element dictionaries (RASTADES, and others) with an objective of recommending standards for Army-wide use. The current organization for and assigned responsibility in these areas gives ACSAC the background we believe essential to assume responsibility for the IRM Data Base Administration function. ADP hardware and software technology assessment studies are also performed by AIRMICS under CSC and ACSAC purview. We recommend ACSAC treat these activities as program equivalents, thus affording these programs a centralized and coordinated approach to assure HQDA (and ultimately the Army-at-large) derives maximum benefit in applying new technologies throughout HQDA.

The IRM Metadata Management function is closely related in nature to the data standards function, especially in the area of automated information. ACSAC, in assuming responsibility for this program, should capitalize on the related experiences of CSC and AIRMICS in executing the Metadata Management function. USAMSSA's experience in implementing a data dictionary, and its cross functional support role experiences should also be available to ACSAC to provide it a technical working knowledge of applied metadata management concepts.

An early task to be performed in implementing the IRM program will be the collection of metadata about automated information to build the HQDA Information Resource Directory. ACSAC currently has responsibility for assuring that information systems are developed according to AR-18-1, promulgating policy for automation and communications, oversight of the DA Standard Program and other IRM related functions performed by CSC and AIRMICS. Since the initial program scope is limited to the management of information which is automated, ACSAC should assume responsibility for coordinating and executing the metadata management functional program. In this way its responsibilities for systems development life cycle management can be integrated with the larger information cycle processes of supply, handling, and use, especially in the area of automated information.

TAG, on the other hand, should continue to collect metadata about non-automated information as it has in the past. The assignment of the IRM metadata management functional program to ACSAC (for automated information) and the overall coordination for HQDA metadata management policy will require a close working relationship and a high degree of coordination with TAG to assure that ACSAC and TAG initiatives related to metadata functions are compatible.

To formalize these activities as programs we recommend that a small office be created in the OACSAC to provide central coordination and direction of these technical activities by developing uniform policy, guidance and consultation support for the HQDA staff and its supporting DPIs. The proposed organization structure of the OACSAC Office of IRM Program Support is shown in Exhibit X-5. Brief descriptions of the activities to be performed by the individual units within the office are presented below.

- Information Systems Coordination Unit

  This unit has responsibility for adding an IRM focus to the information systems functional activity. Its primary concerns are related to agency and DPI life cycle processes in support of information systems development. The section will develop IRM policy in this regard to deal with information concerns such as: review of systems to assure development in accordance with all related policy, uniformity of compliance to policy, information sharing among systems, systems interface requirements, data re-utilization, and impact analysis of system changes.

- Data Standards Unit

  This unit has responsibility to monitor the data standards program relative to standards for data elements and codes, interface standards, etc. Its primary purpose is to evaluate the degree to which data standards, and their use, inhibits or facilitates information sharing, and increases or decreases system development costs. Based upon these evaluations it can make recommendations about how the data standards program can be modified or improved to support IRM goals and objectives.

- Data Base Administration Unit

  This unit has responsibility for establishing HQDA-wide policies and guidance related to the effective use of data bases and associated software in support of HQDA information management. Its initial focus should be on developing standards and guidelines for HQDA DPI use of data bases and commercial and other DBMS software. It should develop sufficient expertise (or know where it resides) to provide HQDA DPIs technical guidance on data base related subjects. Associated with this responsibility will be the responsibility for developing policy related to data administration procedures and practices at HQDA.

- Metadata Management Unit

OACSAC Office of IRM Program Support

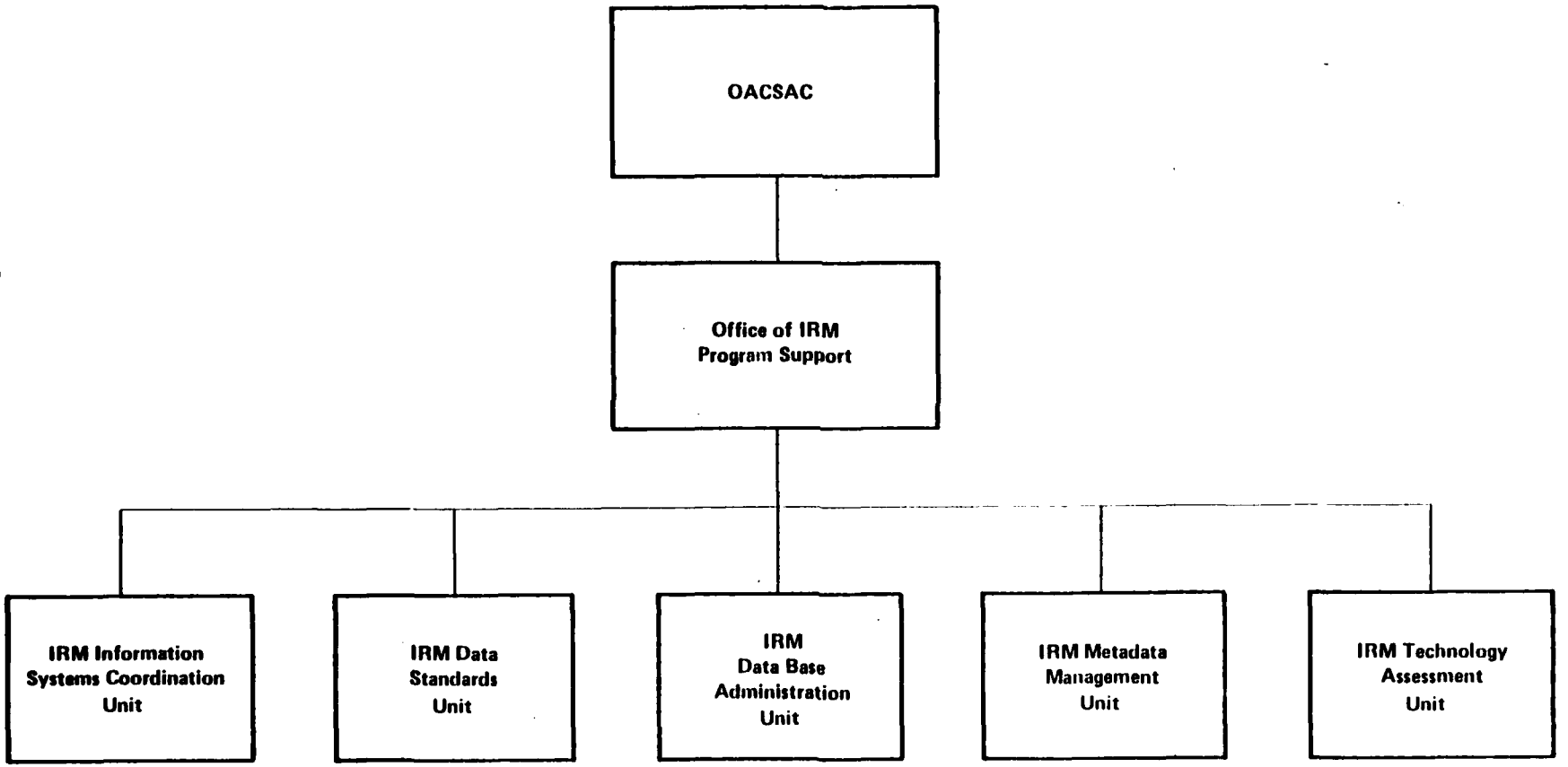


EXHIBIT X-5

This unit is assigned responsibility for developing metadata standards and policy for metadata management. The unit should take a lead role in determining the specifications for the Information Resource Information System (IRIS) and see to its development. It should also develop guidelines regarding specifications for agency data dictionaries and agency data resource directories, as well as a consolidated HQDA information resource directory.

- IRM Technology Assessment Unit

  This unit is assigned responsibility for monitoring the development of IRM technologies in both the Federal and private sectors. In so doing the unit will take a lead role in identifying HQDA IRM problem areas, studying and conducting IRM research, and finding solutions suitable for HQDA application. It will be responsible for publishing its research findings and technology assessments in reports to the HQDA DPIs and other appropriate Army organizations, as necessary.

In assigning these IRM functions to ACSAC particular attention has been paid to those ACSAC organizations which currently perform IRM related activities (e.g., CSC has responsibility for data standards, standard systems, and information systems review; USAMSSA performs some metadata management and data base administration activities in support of ACSAC and the Army Staff; AIRMICS performs data processing related technology assessment studies). In implementing IRM, the ACSAC may involve these existing support organizations in the day to day activities required to operate the IRM functional programs. It is envisioned, however, that the OACSAC office of IRM Program Support will perform the leadership role for these IRM functional programs by actively performing the planning and policy development functions.

(3) TAG Office of IRM Program Support

TAG will also perform a significant role in supporting the implementation of the IRM program at HQDA. TAG has been responsible for the Records Management Program, the Management Information Control System, and the Forms Management Program of the Army for some time. The intent of the IRM program is to coordinate these ongoing Army-wide programs with the other HQDA IRM functional programs to the extent possible. TAG must assume responsibility for evaluating its existing programs, from an IRM perspective, and then modifying its programs to include the information focus sought with IRM. In this way the programs will be compatible with overall HQDA IRM goals and objectives. TAG is also given responsibility for the IRM Education Functional Program.

The recommended structure of the TAG Office of IRM Program Support is shown in Exhibit X-6. Brief descriptions of the activities to be performed by the individual units within the office are presented below.

- HQDA IRM Reports Management Unit

  Reports Management seeks to manage the reports that are generated in the organization by maintaining an inventory of reports and by managing a review and approval process which allows new reports to be created and non-useful reports to be discontinued. IRM focuses on the information contained in the reports themselves. This IRM unit has responsibility for reviewing HQDA IRM policy in the reports area and coordinating the policy with the DA Management Information Control System program and the associated Reports Management Program. Its major areas of concern will be to insure policies are developed which deal with the management of information products relative to reports retention, redundancy, inventory requirements, report sharing, re-utilization of information contained in reports, and distribution to encourage maximum use of existing reports in satisfying new needs for information.

- HQDA IRM Records Management Unit

  Records management addresses the storage of forms, documents, reports, etc. that are conveyors of information. The role of this IRM unit is to identify those IRM program concepts which have application potential for all records within the HQDA Records Management program. The initial focus should be upon the information related aspects of automated data records. This unit will review, evaluate and recommend records management policy related to the creation, storage, use, retention and sharing of automated records. It should also lay the groundwork for HQDA-wide information policies for where records are kept, for how long they are retained, and for microforms use; facilitate the production of records as required in response to external queries (FOI); develop policies for the reduction of Army records holdings at Federal records centers, and provide information management consulting services to the Staff Agencies and the Office of the Secretariat in the area of records.

- HQDA IRM Forms Management Unit

  Forms management strives to manage the empty forms that an organization devises. The IRM Forms Management Unit will be responsible for integrating IRM policies and concepts into the DA Forms Management Program. In this way policies related to forms design, forms control, and forms inventory will be compatible, in an IRM sense, to the other information

TAGO Office of IRM Program Support

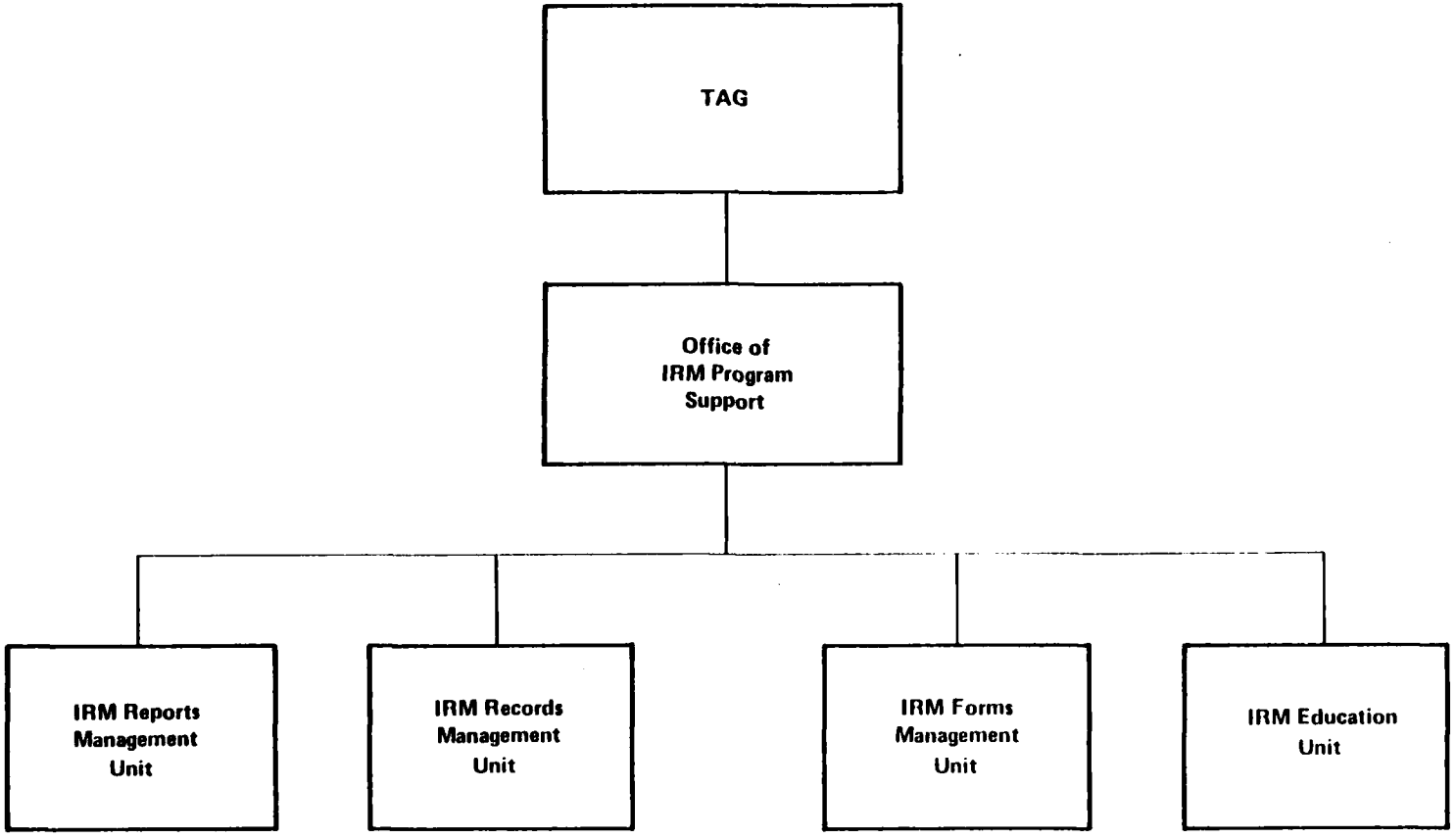


EXHIBIT X-6

management activities. Consolidation of forms is a goal in IRM. Where consolidation can be achieved, the organization can benefit by reducing reporting required from sources of collection and by simplifying data collection. The forms approval function aims at reducing duplicate collection of data, and seeks improved management of data acquisition.

. HQDA IRM Education Unit

This unit has responsibility for coordinating the IRM Education Functional Program which entails establishing policy for, and organizing and planning for a comprehensive effort to assure the development of two basic educational programs: one oriented to the educational needs of the IRM supplier and user communities (the current staff agencies) and one oriented to the educational needs of the IRM handler community (the technical management staffs of the DPIs). The unit will develop guidelines for IRM training programs. As programs become developed, responsibility for training will be distributed (ACSAC will be responsible for budgeting for training within its functional program areas, TAG will be responsible for budgeting for training in its areas, Staff Agencies will assume responsibility for User and Supplier training within their agencies and Handler training within their DPIs).

TAG is further assigned responsibility for studying the need for and feasibility of developing a future career management program for IRM. An IRM career path does not currently exist within the Federal government or DOD. Formulation of an IRM career development program in a practical sense, cannot focus only on automated information; it must address a larger arena of IRM-related job descriptions and career paths. The potential for extending IRM beyond automated information remains high at HQDA. This extension will naturally move into areas for which TAG now has overall responsibility. Therefore, TAG is viewed as the best suited agency to study the need for this career development program because of its assigned responsibilities for the administrative management activities in the Army which focus heavily on all non-automated forms of information. Within these diversified specialty areas TAG has developed an in-depth experience related to the nature of work of these individuals and their career development needs. TAG, by virture of its past roles, has the background and experience needed to evaluate those skill areas which could be redefined under IRM to form career paths within a framework of IRM.

(4) IG/AAA Office of IRM Audit

In order to assess the overall effectiveness and efficiency of the HQDA IRM Program, two major activities must be performed

on a regular basis: internal management review of program activities, and external audit of program activities. Responsibility for internal program management review has been assigned to the IRMA and the IRM Functional Program Managers.

We recommend that the IG/AAA develop the capability to independently audit all aspects of HQDA IRM activity, i.e., program administration, operations, and execution. To accomplish these assigned responsiblities, the IG/AAA will need to establish and staff a small organization.

The recommended organizational structure for the Office of IRM Audit is shown in Exhibit X-7. Brief descriptions of the activities to be performed by the audit unit within the office are presented below.

. IRM Audit Unit

The role of the audit function will be minimal during the first two years of IRM program development. However, the IG should begin preparing the IRM Audit program during the early period of IRM program development so that unique IRM audit procedures may be developed and applied once the program gains momentum.

Early activities of the IRM Audit Unit should concentrate on:

- the development of procedures for conducting audits of IRM activities in HQDA
- the review of external IRM audit policy (OMB, GAO, DOD, etc.) to assure the Army's policies are compatible
- the development of Army IRM audit standards
- the development of plans for conducting IRM audits within HQDA

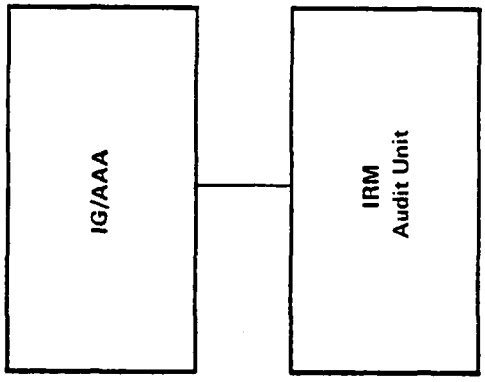
This capability will offer the CSA an external, independent and unbiased view of the program upon which to base decisions relative to program modification and continuation.

(5) The HQDA IRM Steering Committee

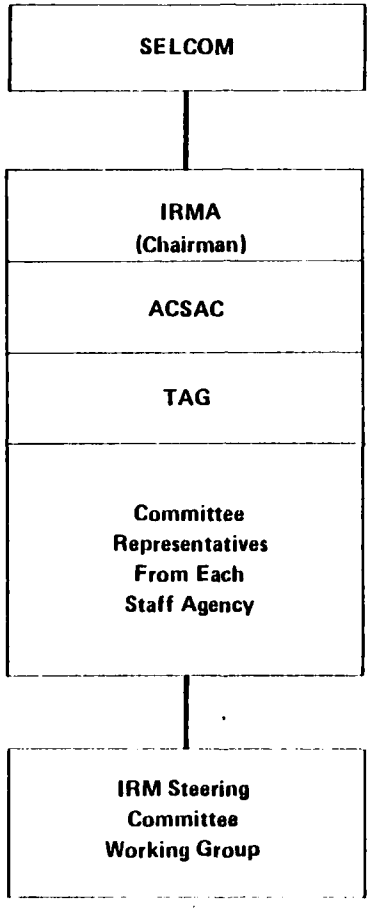
The requirement for a HQDA IRM Steering Committee was established in Chapter V. The functions to be performed by the committee are highlighted in Exhibit X-8, and the recommended composition of the committee is also presented.

The creation of the steering committee is intended to add balance to the program. Its primary purpose is to provide a forum

IG Office of IRM Audit



HQDA IRM Steering Committee



SELCOM Oversight Functions

- Review Cost Effectiveness of IRM Program Annually
- Assure that IRM Program Budget is Appropriate
- Review Major IRM Conflicts/ Issues and Make Recommendations to CSA for Final Resolution
- Determine the Need for Altering/Terminating the IRM Program

Steering Committee Functions

- Represent User/Handler/Supplier Interests
- Suggest New IRM Policy Requirements
- Propose Feasibility Studies for IRM Technology
- Foster DA-Wide Understanding of the HQDA IRM Program
- Appeal Major IRM Policy Conflicts to CSA and SELCOM

EXHIBIT X-8

whereby the HQDA IR Manager, Supplier, User, and Handler communities can be represented on information matters of mutual interest, to air differences of opinion, to identify potential information problems, and to suggest solutions. While actual IRM program management is vested in the IRMA, the IRM Steering Committee serves the purpose of consolidating supplier/user/handler views and opinions to mutually strive for improved information management within HQDA.

We recommend that a new committee be formed to execute the defined functions of the IRM Steering Committee. We believe the scope and magnitude of monitoring and guiding the management of information as a resource warrants a specialized committee structure. Since overall HQDA information issues are likely to impact all of HQDA, including top management of the Army, we recommend this Steering Committee be comprised of General Officers from the various Staff Agencies.

To address the supporting detailed activities that may be essential in resolving IRM issues, we recommend that an IRM Working Group (of support staff) be identified to assist the sub-committee. The working group would be tasked, as required, to support IRM Steering Committee initiatives (e.g., studies, research, etc.)

(6) The SELCOM Role in the IRM Program

The requirement to establish an IRM program oversight organization was identified in Chapter VI. The functions to be performed by the oversight group are:

- Review cost effectiveness of the IRM program annually
- Assure that IRM program budget is appropriate
- Review major IRM conflicts/issues and make recommendations to CSA for final resolution
- Recommend alteration/termination of the IRM program

It is recommended that these oversight functions be performed by the current SELCOM. The SELCOM is recommended for the following reasons:

- It currently exists as an organized and active committee obviating the requirement to create a new committee
- The SELCOM has been organized to address key issues/problems that affect all of HQDA and the Army; information management is a key issue throughout HQDA

- The SELCOM is comprised of individuals who represent top management's views in the Army and thus assures that the interests of top management are taken into account in planning for information and in the commitment of resources to information management.

In this section we have presented the recommended organizational structure of the IRM Management Community and the roles of the IRM Steering Committee and the SELCOM. The necessary personnel resources and recommended personnel grade levels for implementing the IRM program are defined in greater detail in Chapter XI.

2. PROPOSED MODEL FOR STAFF AGENCY ORGANIZATION FOR IRM

We discussed earlier in Chapter IX the difficulty of quantifying the impact of IRM on all the Staff Agencies, since many of the agencies currently execute some aspects of the IRM functions. We do not believe it essential for the IRM program to dictate an organizational structure for the Staff Agencies. Our emphasis is on what the Staff Agencies should do, rather than how the agencies should organize to do it. In that regard we offer a possible IRM functional model to guide the HQDA Staff Agencies in their efforts to organize their resources and implement forthcoming IRM policies. The model is shown in Exhibit X-9.

The model represents those IRM functions which should be performed within each Staff Agency and offers a model for organizational structure. For example, the IRM Forms Management function could be assigned to the existing agency Forms Control Officer. A new function such as Metadata Management could be assigned to a Metadata Officer, who may be newly appointed, or the Metadata Management function may be assigned to a staff individual as an additional function, depending upon the agency. The Staff Agency may find it convenient to designate one or more individuals to be responsible for one or more IRM functions. The resultant organizational impact on any particular agency will depend heavily on the agency's current structure, resources, and level of IRM effort performed to date.

The individual roles, their relationships, and the IRM concepts embedded in the model are best explained through a role and function scenario. The IRM functions (e.g., Information Systems Coordination, Information Planning, etc.) will be performed by designated individuals within the agency. For each agency the resources required will vary depending on degree of workload. Thus, we do not attempt to indicate resources required to support any single function.

The IRM concept has as its goal the effective use of the information resource and the concurrent cost efficiency of utilizing the resource. The roles of the primary players identified in the model are discussed in paragraphs which follow:

Possible IRM Functional Model for HQDA Staff Agencies

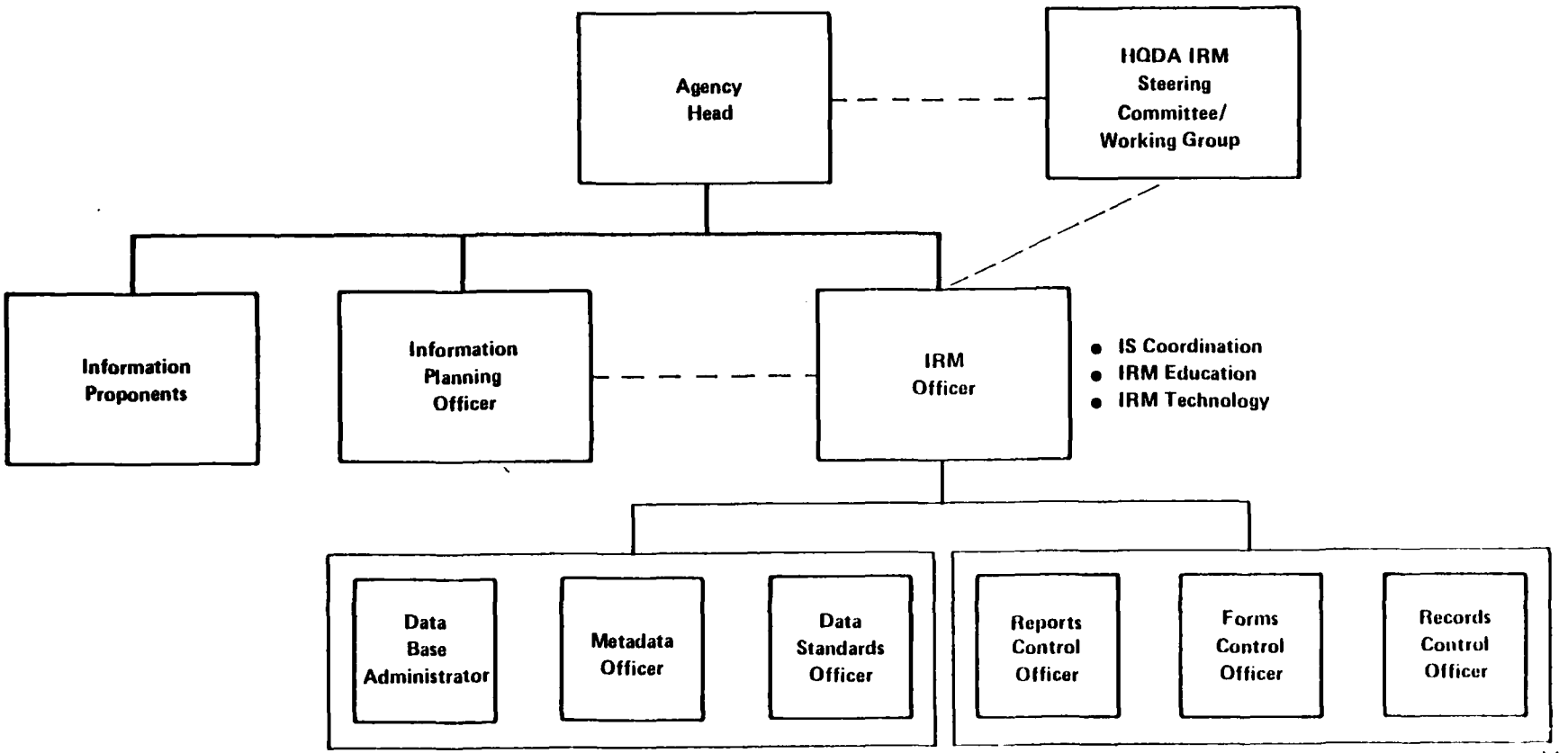


EXHIBIT X-9

- The Agency Head

  As a senior manager on the Army Staff, the Agency Head assumes responsibility for the effective utilization of resources, and in particular the information resource, and thus becomes the agency advocate for IRM. He represents the agency user and supplier communities and the agency handler community (his supporting DPI). In order to represent their interests on a HQDA-wide basis, the Agency Head is a member of the IRM Steering Committee. He is able to provide input to the committee process and benefits from its direction. He also receives IRM policy guidance and overall program direction from the IRMA.

  The Agency Head is supported in achieving agency goals and objectives through the coordination and cooperation of several staff support elements: Agency information proponents (to be designated); an information planning officer; an IRM officer; and one or more IRM functional officers (based on Agency need).

- The Information Proponents

  A key concept in IRM is the assignment of proponency for information. To implement IRM effectively, the Agency Head will designate information proponents as necessary within the agency to represent user information needs and requirements. These proponents will be responsible for current requirements, their continued need, and for justifying new needs. When new needs are identified the proponents will represent the user perspective, in conjunction with IRM functional officers as necessary. For example, the proponent will follow established steps or procedures to assure that the necessary coordination takes place when new needs are validated. This may require coordinating a new form request with the Forms Officer, new metadata definitions with the Metadata Officer, and so on.

- The Information Planning Officer

  The Agency Head may designate an Information Planning Officer (IPO) and assign him information planning responsibilities for the Agency. The IPO will, under agency and IRMA guidance, develop the agency's information plan. In constructing the plan he will coordinate internal and external agency requirements - focusing on information.

- The IRM Officer

  An Agency IRM Officer may be designated to coordinate the execution of the IRM functions as required. The major portion of IRM activity will occur under his purview (he

may, in fact, perform some of the duties himself). Each agency will have to commit the resources it deems necessary to manage its information resources. Depending on Agency functions, there could be wide variances.

- The IRM Functional Officers

  The model suggests that several more technical and administrative IRM functions may require specific officers within the Staff Agencies. The individual agency staffing requirements for these functions may vary widely depending on organizational workload. For example, in one agency one individual may be assigned all six functions while in others, each function may require a single full-time individual.

By suggesting a recommended model for organization the question of how to organize for IRM is left to the discretion and circumstances of each Staff Agency. The definition of the IRM program and the IRM functions to be performed should provide each Agency a basis on which to make their resource commitment decisions.

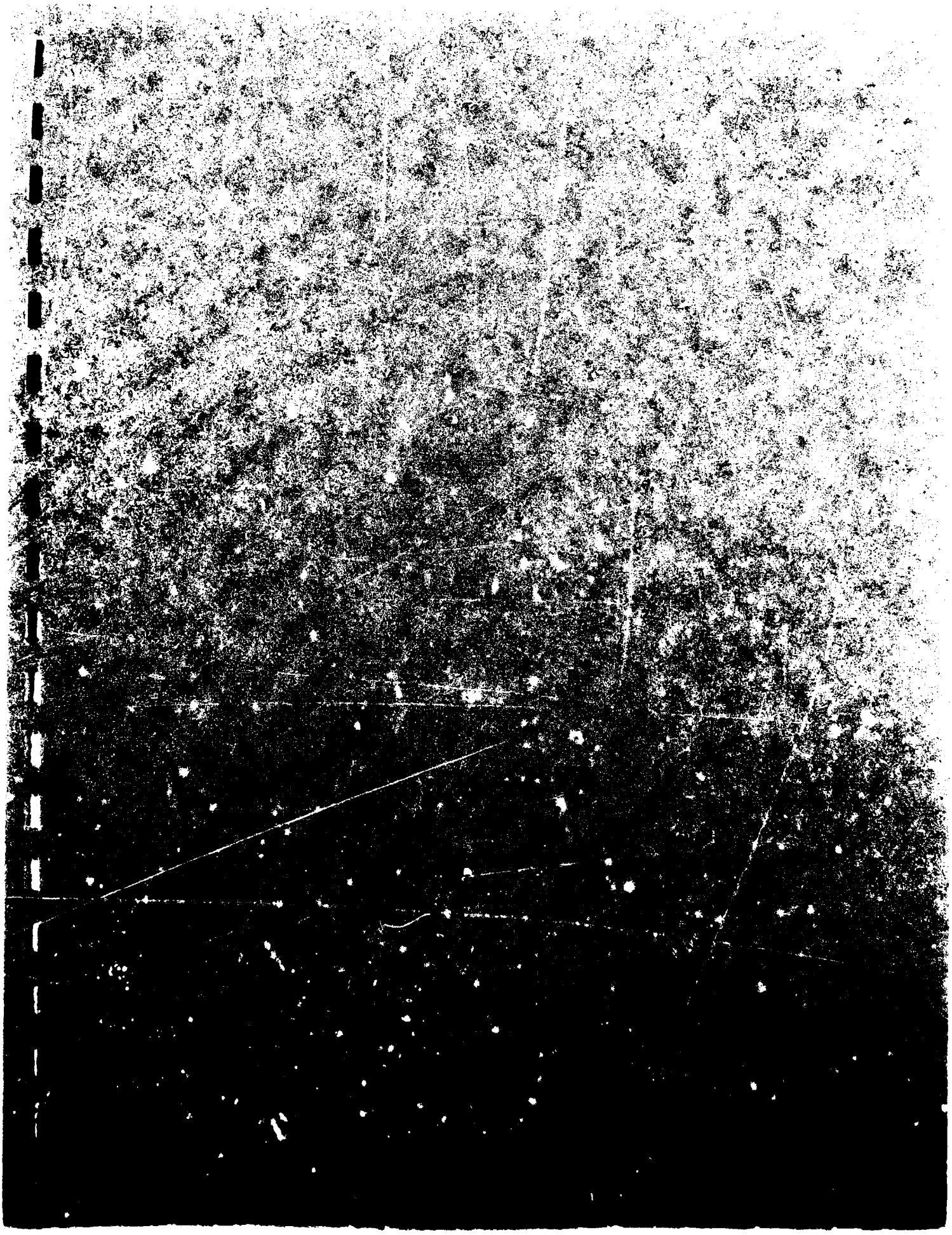
In the foregoing discussions we have presented recommendations for organizing the management component of the IRM Program and have also recommended a model for organization to assist the Staff Agencies and DPIs in organizing their resources in support of the IRM Program. These recommendations have been formulated in light of current HQDA resource constraints and are the minimum we believe necessary to initiate the program. By approving and implementing these organizational recommendations HQDA can accomplish the early tasks essential to program success:

- It can formulate basic IRM policies and procedures and introduce them to the line authorities within HQDA which must promulgate and comply with them
- It can design the first year IRM program plan and can inaugurate the program
- It can set the direction for conducting and compiling the initial inventory of HQDA's automated information and can begin to build a directory to facilitate locating the contents of the resource
- It can operate the IRM program for the initial period, substantial enough to collect and evaluate evidence of early program results, so that it can formulate new short-term and long-range courses of action, including revisions to basic policies and procedures.

These early program efforts should be led by the HQDA IRM Administrator, a key person, whose qualifications require the knowledge

of IRM concepts and practices necessary to manage the program and who can also maintain close contact with top management of the Army Staff.

In the following chapter, we present an implementation plan and schedule for the IRM program. An early phase in the schedule addresses the establishment of these organizational structures to support program operations. It also identifies the resource requirements that will need to be committed to staff the organizational components on an incremental basis.



XI. IMPLEMENTATION PLAN

Implementation of the HQDA IRM Program will require a multi-step process which is graphically depicted in Exhibit XI-1. The magnitude of the potential impact of the HQDA IRM program necessitates a phased approach over a 5-year period. This period of time is required to overcome the substantial learning curve which HQDA must undergo to determine what is needed and what is feasible in managing its information resource. This phased approach also allows HQDA to plan and budget for the resources it will commit to the program on a gradual basis. The first phase of the process, HQDA IRM Program Plan, is shaded on the graphic to indicate that it has been completed with the presentation of this report. There is much work yet to be done within HQDA to allow further progression in program implementation. The information contained in this document will serve as a starting point for the next phase of the implementation: Establishment of the HQDA IRM Task Force.

The implementation plan and schedules are intended to guide HQDA management in implementing the IRM program by identifying specific activities which must occur on a phase by phase basis. The timetable built into the schedule allows management to evaluate progress towards full implementation by comparing actual progress to planned events. The implementation plan thus provides HQDA a gradual process of personnel education, organizational learning, model development, prototype testing, and an early demonstration of benefits to aid it in evaluating the overall program.

This chapter concentrates on the two major aspects of the implementation plan:

- The implementation plan itself which includes activities, schedules, and control points; and,
- Resource requirements.

Each of these aspects is discussed in greater detail in the sections which follow.

1. IMPLEMENTATION PLAN

In presenting an expanded discussion of the activities required during IRM program implementation, this section is organized in the following areas:

- Recommended Approach to Program Implementation

- Implementation Activities

- Discussion of Milestones and Control Points.

The implementation plan is designed to provide HQDA with a schedule for continued program implementation over a 4-5 year period. In structuring the plan the objective was to retain and enhance current momentum for IRM through positive but not drastic organizational change. The discussions of the recommended approach to implementation, details of activity for each of the implementation phases, and the program milestones are presented in the paragraphs which follow.

(1) Recommended Approach to Program Implementation

In very large organizations, like HQDA, the process of instituting an IRM program is a substantial undertaking. Little has yet been published about the experiences of other organizations in attempting to establish such a program. The knowledge that exists suggests that the size and complexity of the organization have more of an impact on the program's implementation than do the amount of resources and personnel committed to implementing the program. Therefore, in organizations as large as HQDA, where major data handling activities are found in many suborganizations, a phased or multi-step implementation is preferable.

Under the distributed approach to IRM which we have recommended, we envision that the implementation will occur in two ways: within suborganizations on a component by component basis and as a single program throughout HQDA under the IRM Administrator's central direction. This approach permits each of the DPIs to establish DPI-level IRM programs, but allows the IRMA the opportunity to give attention to the problem of consistency among programs, thereby assuring the overall HQDA program success. This approach cuts across organizational lines as well and provides the IRM program the degree of centralized coordination it requires to reduce the local optimization that could occur if the DPIs developed totally independent programs.

Arthur Young & Company recommends HQDA follow a multi-step approach using phased implementations of IRM program concepts. Use of phased program implementation will:

- Distribute the resource requirements for implementation over a longer period of time allowing a more balanced use of personnel and funds

- Permit sufficient lead time for the Staff Agencies to prepare for program implementation

- Allow HQDA an initial period of time to begin a large organizational learning process

- Enable HQDA to focus on certain IRM activities which will produce substantial early results.

Implementing an IRM program in HQDA will require a considerable effort by many individuals and organizations dispersed throughout HQDA. By following a phased approach, time will be available to create an understanding of the needs, benefits, and philosophy of IRM in the HQDA environment and provide an organizational setting to foster a sense of participation on a HQDA-wide basis.

(2) Implementation Activities

IRM program implementation activities include those phases shown in Exhibit XI-1 and follow the program plan to achieve a full program implementation. The timing and nature of phasing of the IRM program are:

- Consistent with the nature of the overall organizational goals of IRM
- Consistent with the characteristics of the HQDA organizations involved in the program (i.e., some components already are performing IRM functions)
- Reasonable, given the quantity and expertise of personnel resources who will be available to implement the program
- Sufficiently balanced to allow the IRMA the control and coordination of suborganization task activities that are necessary to achieve an effective HQDA-wide program.

The objectives of each phase and the activities which should take place within them are discussed below:

(a) Establish HQDA IRM Task Force

In order to capitalize on the momentum already generated at HQDA by the IRM study, we recommend HQDA take action to establish an interim IRM Task Force. Creation of the IRM Task Force will allow the program initiatives to continue while formal actions are completed to establish the Office of Information Resource Management and to appoint the IRM Administrator and the IRM Program Manager.

The task force should be comprised of approximately five individuals dedicated full time for a period of approximately 120 days. The task force leader should be an O-6, or equivalent, in rank. We recommend these individuals be detailed from their current organizations to serve on this task force during the transition period until the IRM Administrator and the IRM Functional Program Managers are

HQDA Information Resource Management Program

Implementation Plan Overview

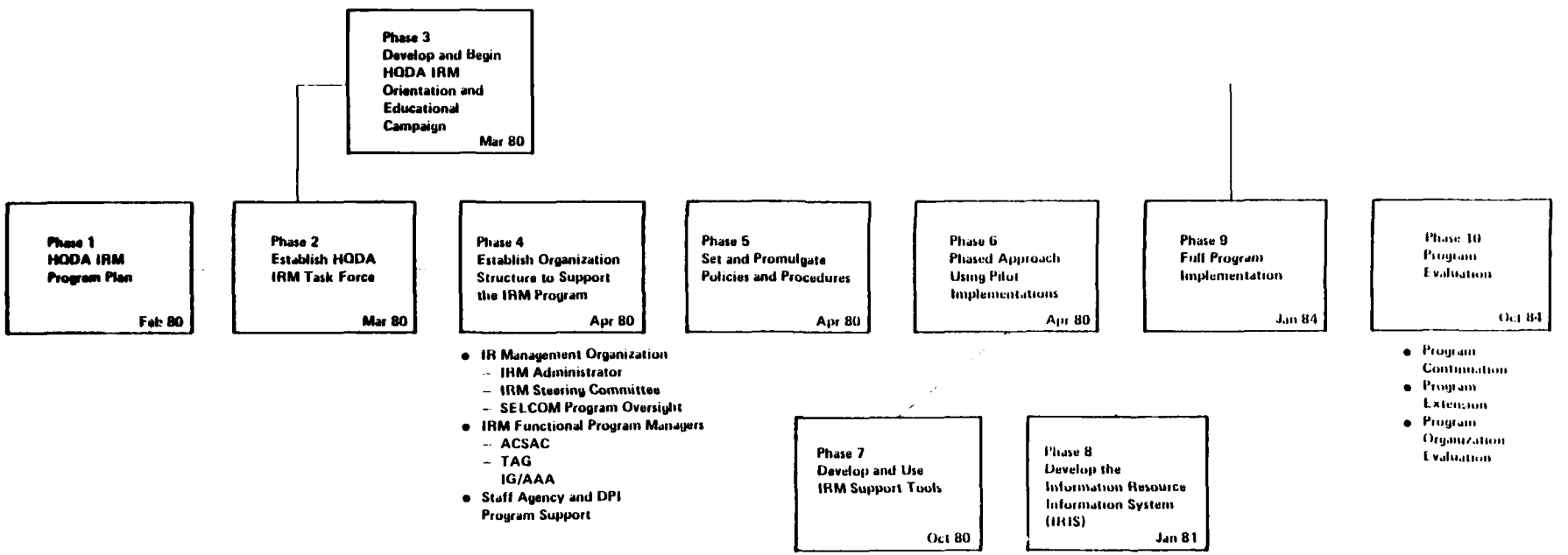


EXHIBIT XI-1

established. Several options exist for staffing the task force:

- Identify likely candidates from the existing SAG for assignments to the task force

- Identify interested and qualified candidates from the selected Staff Agencies which will have lead roles in implementing IRM (e.g., ACSAC, TAG)

- Identify interested and qualified candidates from HQDA organizations at large (e.g., DPIs, Staff Agencies, Field Operating Agencies, etc.)

High levels of interest in IRM have been expressed by many individuals who have attended SAG briefings and meetings, and by individuals who have attended or participated in Arthur Young & Company's briefings to senior Army executives and staff throughout HQDA and its supporting organizations. This high level of interest should facilitate the selection of task force members. The staffing of this task force will require quality, experienced people who are knowledgeable in both the IRM concept and the operational structures of HQDA.

The task force should, as a minimum:

- Formalize recommendations for IRM Steering Committee membership

- Prepare an agenda item for the SELCOM to brief the committee on tentative IRM plans and solicit SELCOM guidance and direction

- Prepare preliminary agenda topics and establish an initial schedule for the IRM Steering Committee

- Prepare draft policies for the IRM Program (based upon our study recommendations) and coordinate staffing through established HQDA channels

- Validate initial IRM Program staffing requirements and make recommendations for approval and authorization

- Serve as the HQDA focal point for Information Resource Management, pending formalization of the Office of IRM.

The SAG should develop a Chief of Staff Memorandum (CSM) to establish the task force and identify additional specific objectives for the task force to accomplish during its appointment. The task force should be required to

produce a report on activities accomplished and make recommendations to the SELCOM for continuing and followup actions prior to its termination. Potential for extending the term of duration of the task force beyond 120 days should be a part of the original charter, subject to CSA review and approval.

(b) Initiate HQDA-wide Educational Campaign

The commitment to manage information as a resource places responsibilities on anyone involved in the management, supply, handling, or use of information at HQDA. This means virtually everyone assigned to HQDA will be affected in one way or another. To make this concept effective and sustaining, HQDA will have to commit to an ongoing and continuous education program that addresses information management topics and concepts. During this phase an overview of IRM and its impact upon the information resource communities should be presented to all HQDA personnel to inform them of the nature of the IRM program and its expected benefits. Then as more detailed educational programs are developed, more technical IRM orientations, classes, and courses can be conducted.

Users of the HQDA information resource will require introduction to what the resources are, where they are located, and how they can be accessed. Handlers of the information resource will require education in what technologies exist, how they should be applied, and what standards must be followed. Suppliers of information will require education in their explicit rights and responsibilities. Likewise, the new managers of information will require training in the IRM approach and program objectives. As the program matures, these educational requirements will become more defined and organized; in fact, responsibility for IRM education policy and guidance has been assigned to TAG under the IRM Education Functional Program to insure total requirements are planned for and met in the out years.

To bridge the gap between current needs and future programs we recommend that SAG members become interim advocates for IRM, publicizing the philosophy of the concept and making their Staff Agency personnel aware of its meaning, benefits and costs. This can be accomplished initially through widespread distribution of both the Phase I and Phase II reports, but it should be understood that educational programs must endure beyond the tasks of merely explaining the report. Once the IRM program becomes operational, a continuing effort will be required as the nature of the resource changes and as the members of the HQDA information environment change.

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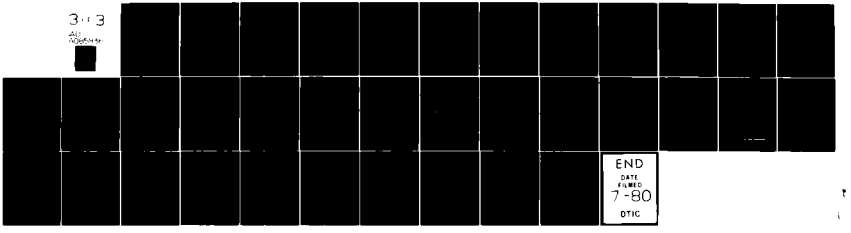

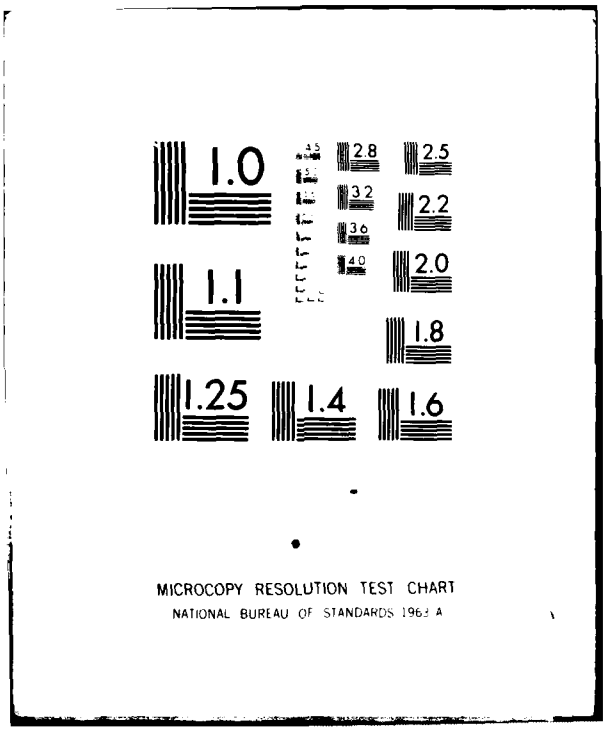
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(c) Establish an Organization Structure to Support the IRM Program

During this early phase of implementation, the IR Management Community should be formally established. The SELCOM should undertake its programmatic oversight role; the IRM Steering Committee should assume its direction and guidance role; and the program functions should be formalized through the establishment of the Office of IRM, the appointment of the IRM Administrator, and the appointment of the IRM Functional Program Managers.

These activities should begin as soon as possible after the task force terminates existence in order to maintain program continuity. The role of the SELCOM, the IRM Steering Committee and its supporting Working Group should be formalized through the publication of a Chief of Staff Regulation, outlining function and responsibility requirements for these IRM Program organizations.

Initially, during this phase, the SELCOM role will be minimal since program activity will just be starting. Its main concern should be focused on monitoring start-up processes and lending whatever guidance and assistance it can to facilitate early progress in the program. Its role will become more important and its activity will increase after a year of program operation when it will begin its annual program review processes.

The IRM Steering Committee, however, should play a larger role during this early period of program implementation. Its composition should be defined and it should meet early in this phase to:

- Approve task force recommendations related to early program resource commitments for the Office of IRM (IRM Administrator and immediate staff)
- Approve the initial set of HQDA IRM program policies
- Determine the working procedures for future Steering Committee activity
- Identify and set first year IRM program milestones
- Review recommended selected project implementations and provide guidance to the OIRM for implementation.

It will be necessary for the IRM Steering Committee to exert a strong leadership role during this phase to ensure program success.

Also during this phase the OIRM should be formally established and staffed. Selection and appointment of the IRM Administrator will be a key event, for the individual selected will serve as the senior information resource management official for HQDA. Early priorities will focus on IRM policy coordination, the implementation of the first year IRM program plan, and a high level of coordination among the HQDA IRM Functional Program Managers.

At the conclusion of this phase the role of the SELCOM and the role of the HQDA IRM Steering Committee should be formalized, and the committees should be organized and active; and the IRM Administrator and his support staff should be selected and in place.

(d) Set and Promulgate Policies and Procedures

The establishment of the formal organizational structures to support the IRM program provides the mechanisms for execution of the IRM program policies and procedures. Arthur Young & Company has included in this report an initial set of policy concepts we believe are essential, as a minimum, for implementing the IRM program at HQDA. In this phase, the IRM Administrator should review these policy recommendations and select those policies HQDA wishes to implement. This decision may incorporate some or all of the recommended statements or it may expand upon them. An initial step in the process may require the policy statements to be reworded to reflect terminologies and phraseologies more suitable for Army Regulations.

In formulating an IRM program for HQDA, we have introduced many concepts, and have elaborated on many of the benefits to be achieved from an IRM program. HQDA, however, may not be able to achieve all of the benefits in the near-term. This may not be practical nor feasible. The statement of HQDA IRM program objectives forms the basis for policy selection to support program implementation. In setting specific objectives, the IRM program managers may need to set priorities for benefits which HQDA should pursue.

In setting initial objectives, implementors should choose several objectives which offer good prospects for substantial and meaningful payoff, and which also address data problems top management recognizes as important. The initial policy statements, then, should be stated in terms which support the achievement of the initial program objectives.

During this phase the IRMA should present the recommendations for initial program policies to the IRM Steering Committee for review and coordination. Once

Steering Committee concurrence is received, the policies should be approved by the IRMA for implementation. Concurrently, during this period the IRM Functional Program Managers should be recommending policy statements which support their individual programs. Proposed policy statements would require the same review, concurrence and approval processes prior to implementation.

Work should be commenced during this phase to document and publish program management procedures the IRM Administrator deems essential to support day-to-day program activities. This could require the publication of a directives manual (or some other mechanism) to achieve the level of coordination and degree of standardized procedures and practices required.

(e) Phased Approach Using Selected Implementation Projects

Based upon the first year IRM program plan and implementation schedule, approved in the previous phase, implementation of the IRM program can be initiated. Several different levels of activity should be initiated during this phase: the IRM Functional Program Managers should be taking steps to organize and initiate their individual programs; the Staff Agencies and DPIs should be restructuring their current staffs to initiate IRM program functions; and plans should be developed for some selected implementation projects.

By this time in the implementation schedule decisions should be finalized regarding resource authorizations for staffing the IRM Functional Programs. Each of the selected Staff Agencies assigned responsibility for Functional Program Management should be completing their organizational restructuring to initiate their programs. Work should be concentrated on developing program plans, program budgets, program review and evaluation procedures, program control processes, responsibility assignments, etc. Final policy analysis should be completed, and the Program Managers should publish the initial program procedures and provide the guidance necessary for the functional staffs to initiate their own IRM practices within each IRM functional area.

Concurrently during this phase each HQDA Staff Agency should be formalizing its organizational structure to implement IRM. Based on the model for staff organization presented in Chapter X, each agency head should approve an initial approach and resource authorization.

Lastly, during this phase the plans for selected program implementation projects should be formally documented for review by the IRM Administrator, and forwarded to the IRM

Steering Committee for review and approval. Successful application of all IRM concepts, or a major portion thereof, to a minimum set of projects provides HQDA an opportunity for demonstrating the effectiveness of the IRM program. The IRMA should coordinate potential IRM projects, with the assistance of the Staff Agencies, and suggest recommendations to the Steering Committee for approval. Once approved every effort should be afforded the project to make the test successful. Through such a test the benefits to be derived from IRM can be demonstrated, on a small scale, at first. With this experience, confidence in the concept can then be used to build upon and expand the program.

The Comptroller of the Army (COA), in his new role as the Army Resource Manager, has taken initial steps to integrate the Army's resource data bases (dollars, personnel, and materiel). COA is presently developing a management accounting coding scheme that defines the basic management structure components to satisfy the Army's resource information needs. This important ongoing effort is another candidate project for implementation as an IRM pilot. The IRMA will need to work closely with COA in defining the Army's resource information needs and responsibilities.

To assist HQDA in planning for these activities we have identified several areas which require additional study or development:

- Study the need for and feasibility of expanding the scope of IRM to include non-automated information
- Study the impact of extending the scope of the HQDA IRM program for automated information to the Army at large
- Design and develop the HQDA Information Resource Information System and its component metadata management tools (such as dictionaries, directories, locators, inventories, and standards)
- Develop an information planning methodology to be employed by HQDA and its Staff Agencies to include standards for information requirements specification and guidelines for information planning
- Develop a methodology for accumulating the costs of information in HQDA (i.e., identifying, categorizing, aggregating, and attributing information costs)
- Implement a pilot IRM program in a functional Staff Agency (such as COA) or in conjunction with ongoing inter-Agency projects such as the CSA data base or the current PROBE system development effort

- Develop official IRM policy statements and relevant Army Regulations both for the overall HQDA IRM program as well as for the individual IRM functional programs

- Conduct a continued and expanded HQDA-wide IRM educational campaign and the administration of specific training in such areas as data base administration, data base management, information requirements specification, and information planning

- Conduct continued research in information resource management and the application of IRM technology to the HQDA environment.

In addition to assigning IRM responsibilities to current members of the Army Staff, HQDA has available to it the use of contractor support to assist in implementing the program. HQDA, through the recommended Task Force, will need to prioritize, budget, coordinate, and assign responsibilities for mointoring these potential contractual efforts. The integration of these individual efforts into a cohesive HQDA IRM program is another area where an overall integrating contractor could be employed.

(f) Implement Use of Tools

We identified in Phase I the necessity of developing a complete range of IRM tools (metadata data bases, dictionaries, directories, forms and reports inventories, records data bases, etc.) to assist HQDA in managing its information resource. Some of these tools have already been developed on an agency by agency basis. This type of activity must continue where already underway and must also be initiated in agencies which have not as yet begun such development. In addition to developing individual agency tools, some HQDA-wide tools, e.g., a HQDA information resource directory (IRD), should be developed. During this tool development phase, which is one of long term duration, a high degree of coordination will be necessary by IRMA and the related functional program managers to assure that standards, directives and guidance are provided and that tools are not developed independently of each other. HQDA, as a whole, receives maximum benefit from these tools when they are compatible with each other thus affording ease of use and maintenance by all HQDA members who utilize the information resource.

(g) Development of the Information Resource Information System (IRIS)

This phase, like the previous two phases, will be ongoing in nature. The HQDA IRM Administrator will be the

proponent for the development of the IRIS required to support the HQDA IRM Program. The IRIS is designed to provide service to:

- the IR Management Community in program progress tracking
- the IR Handling Community in support of information systems life cycle development
- the IR Supplier and User Communities in support of locating information and coordinating definitions.

As indicated earlier in Chapter VIII, the IRIS is a framework within which the management of data and information resources can occur in an orderly and systematic fashion. As such, the IRIS is not one automated management information system, but is rather a system of systems, some of which will be automated and some of which will be manual.

The IRIS concept requires the integration of current capabilities and the development of new capabilities to provide the IRM Administrator, his staff and other principals of the HQDA IRM community, the metadata (data about data) they need to assist HQDA in planning for, controlling, and making cost-effective its data and information.

During this phase of implementation, the IRM Administrator should assure that the IRIS conceptual and detailed system designs are completed and schedule a plan for system development and implementation. We believe these efforts should focus on the development of several system components (e.g., Agency information directories, a forms data base, reports data base, and HQDA information resource directory); however, these development efforts require a very high degree of coordination by the IRMA to assure the desired degree of system compatibility results. (Refer to Chapter VIII for a more detailed discussion of the IRIS concept.)

(h) Full Program Implementation

At the conclusion of the final phase of program implementation, all HQDA organizational components should be participating in an active, organization-wide IRM program. Due to the large scale nature of the IRM program, the SELCOM and the IRM Steering Committee may be required to reassess and revise the organizational structure, program objectives, resource commitments, and the delegated authorities and responsibilities as the program grows. As the program begins to reach maturity during this phase the IRM Administrator, in coordination with the SELCOM and the

Steering Committee, should begin to plan additional information management activities for the succeeding five year time period.

(i) Program Evaluation

During the implementation of the IRM Program the program should be monitored and revised for effectiveness. Yearly reviews should be conducted during the implementation cycle. Over the first few years some revisions or reshaping of the program are to be expected. Farther out, during the 4 to 6 year period, when the program is operating at what can be termed "full implementation" the program should be thoroughly evaluated based on need and effectiveness. Considerations such as program extension, changes to organizational structure, and continuation of the program should be evaluated. At periodic intervals Program Evaluation Reports should be written by the IRM Administrator which should include an evaluation of program performance, operational costs, areas for improvements, determinations of other enhancements, and a confirmation of program benefits.

(3) Milestones and Control Points

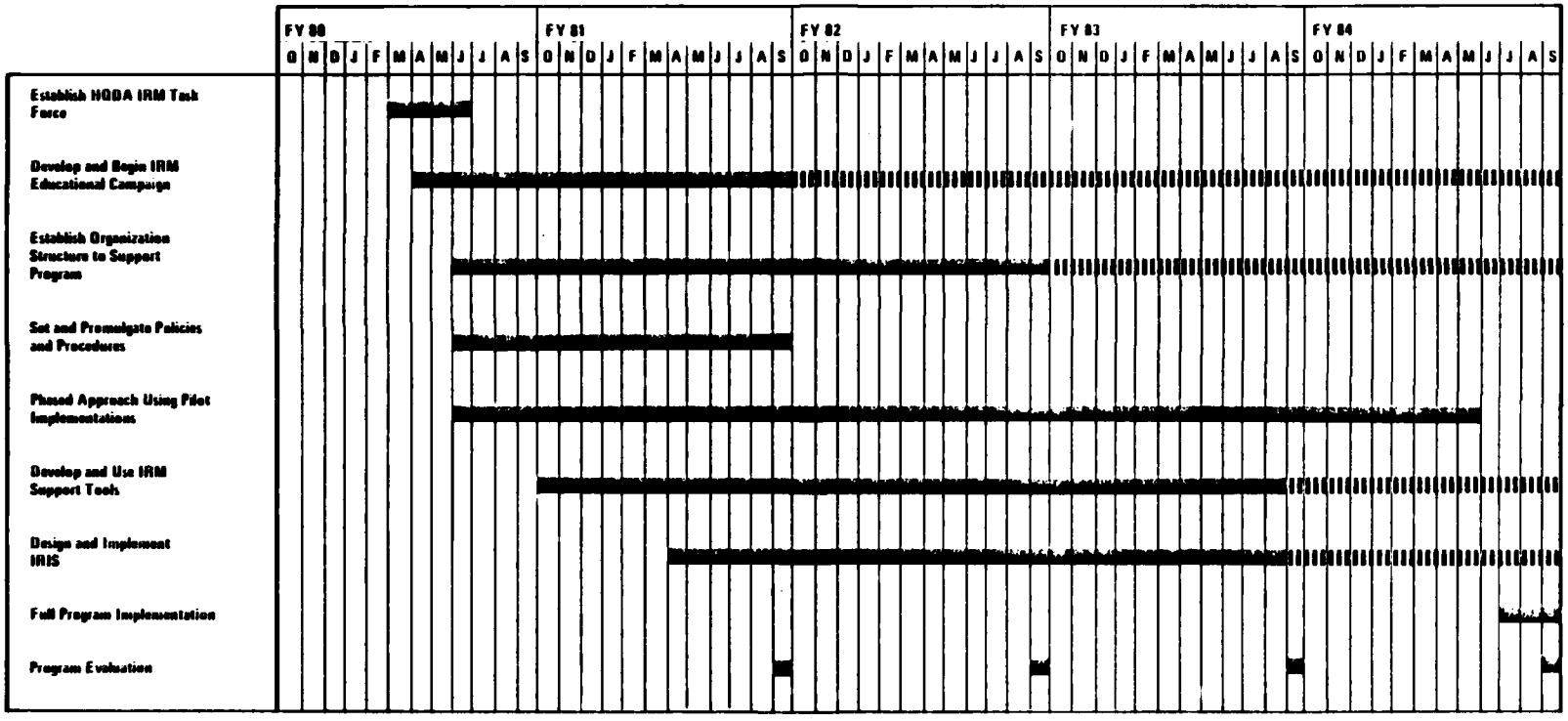
The completion of each phase of the program can be considered a milestone in program development. Since many of the phases overlap, and several of the phases have lengthy durations, HQDA may wish to introduce intermediate milestones for program evaluation purposes. These could be identified with end of Fiscal Year activities, as an alternative.

The completion of each phase of activity should end with the production of a document which relates the activities performed during the phase. This document should be prepared by the IRM Administrator and submitted to CSA via the SELCOM to facilitate review of activities to date, and adherence to schedules so that approval can be obtained for progression to the next phase of implementation. Exhibit XI-2 presents an approximate schedule for the implementation plan described in this chapter. In addition, we recommend that the IRMA report program progress annually to the IRM Steering Committee and the SELCOM.

Throughout the program, implementation schedules may be affected because of cost or personnel resource considerations. By evaluating the program on a phase by phase basis, or on a yearly basis, HQDA will be able to assess overall program progress related to projected plans.

HQDA Information Resource Management Program

Implementation Schedule



Initial Program Activities

Follow on Program Activities

EXHIBIT XI-2

Q-2 5

2. RESOURCE REQUIREMENTS

This section describes the resource methodology utilized by Arthur Young & Company and presents our estimates of the start-up costs for the proposed HQDA Information Resource Management Program. Program start-up costs are based on general assumptions which provided the basis for resource estimates. The assumptions and resource estimates for the recommended program are further discussed below.

(1) General Assumptions

A commitment by HQDA to manage information as a resource will require HQDA management to incur some additional costs, on an incremental basis. For information resource management, the costs incurred are primarily up front in the program, and are not substantial when compared to funds and personnel already committed to data and information handling activities at HQDA.

HQDA management should be prepared to accept a low rate of return on the program during the first few years. However, this situation should improve itself beginning in the third to fifth year when HQDA should begin to achieve benefits that significantly outweigh the costs incurred for such a program. Once active, the program's operating costs should stabilize, with costs primarily committed to maintaining the HQDA Information Resource Directory (IRD).

The major portion of start-up costs for an IRM program are associated with developing the collection of metadata, i.e., the nature, sources and uses of the organization's information resource, referred to as the Information Resource Directory. Once the IRD is assembled, the ongoing operating costs for the IRM program are proportional to the efforts needed to maintain the IRD data base. The more dynamic the environment and faster the rate of change, the greater the operating costs. The other start-up costs are associated with establishing a small nuclear staff of IRM program management principals.

Because the HQDA total automated information resources are so vast, it is almost impossible to forecast with precision the start-up costs required to inventory them. There are, however, certain fixed and variable costs which can be identified which allow HQDA management a basis for evaluating the merits of the program and provide HQDA decision makers some data upon which program decisions can be made.

The fixed costs HQDA can expect to incur are:

- Personnel costs to establish the Office of IRM

- Personnel costs to establish the IRM Functional Program Managers within selected Staff Agencies

- Personnel costs associated with designating several individuals as IRM program principals (coordinators of IRM activity) within the Staff Agencies and at the DPIs

- Development costs for certain IRM tools such as:

  - HQDA IRD

  - Selected automated inventories or data bases to support some IRM programs (e.g., forms data base, records data base, metadata directories).

The foregoing fixed costs are those required to establish the IRM program staffs and the necessary support tools needed to begin the program. As described earlier these personnel resources are necessary to formalize the IR management community that will permeate HQDA. In large organizations, like HQDA, these costs tend to be modest, relative to the size of the organization. The resources are not substantial when compared to the resources currently budgeted in HQDA for information handling activities. In some cases, where personnel resources have already been committed as a result of HQDA attempts to manage resources (e.g., forms, reports), the fixed costs to adapt the function to the IRM program may be negligible.

The major variable costs of the program are associated with building the HQDA IRD and are based on:

- The number of organization areas or management programs encompassed

- The complexity of the areas/programs, in terms of information handling

- The quality of existing documentation of information handling systems and operations

- The schedule or phasing of the IRM program.

Thus, HQDA can make decisions about how much information should be managed, when the information should be inventoried for inclusion in the IRD, what metadata (entity and attribute specifications) should be recorded, etc. In so doing, it can exercise a degree of control over the variable costs incurred. Likewise, in instances where data bases have already been created to support existing programs (e.g., forms, reports, records) the costs to incorporate the existing data bases in the HQDA IRD will be much less than if the inventory had to be built from scratch.

(2) Summary of Estimated Resources

To present the cost estimates for the implementation of an HQDA Information Resource Management Program, cost estimate matrices are utilized. Since the recommended implementation plan for this program includes a phased approach consisting of multiple phases and a number of pilot program implementations over a multi-year period, matrices have been designed to show the estimated personnel and contractor support costs by phase for the implementation period.

Resource requirements are discussed in the two categories of personnel resources and contractor support costs. Further details regarding resource requirements, on a Fiscal Year basis, are presented below.

(a) Personnel Resource Requirements

During Phase I of the study the interviews with HQDA staff managers and professionals and with DPI managers and professionals indicated many individuals are currently performing duties which are directly related to IRM activities, while others are performing duties which are closely related to IRM activities. The duties are full-time in some cases, and part-time in others. Because IRM is a new concept and introduces new terminologies and activity descriptions, it has been difficult to identify the current level of effort expended on IRM activities throughout HQDA and its DPIs. For this reason, the requirements for personnel resources to support the IRM program, in terms of new positions, are extremely difficult to quantify. In addition, the initial scope of the IRM program may change during implementation.

To overcome these unknown variables, certain assumptions were made about the personnel resource requirements for program implementation:

- personnel resource estimates are projected based upon a gradual startup of the program
- the scope of the program will be tightly controlled during the initial years, therefore, personnel requirements will be minimal and will be easier to identify
- personnel currently performing IRM related activities will have their efforts integrated with the IRM program, upon identification

After careful consideration of what is necessary and what is feasible for an IRM program at HQDA, we have developed

a program implementation plan and schedule we believe are achievable by HQDA. Given this program definition, we have identified the personnel requirements, on a man year and skill level basis, that are required to implement the program.

A summary of the man years of effort by Fiscal Year and by area of impact is shown in Exhibit XI-3. The personnel resources, in man years, have been identified for formalizing the IR Management Community (including establishment of the Office of IRM, and designation of ACSAC, TAG, and IG/AAA IRM functional program managers and staff); and, for staffing IRM principals within the Staff Agencies and the HQDA DPIs.

Details of the personnel requirements on an area of impact basis are explained below:

. Office of IRM

Formal staffing of the Office of IRM should be planned to begin in FY 1981 with 5 personnel on a gradual basis until full strength is achieved in FY 1984. Exhibit XI-4 identifies the grade levels recommended and depicts the time period for resource commitments.

Ideally, at full program implementation, we envision the IRM program would justify a Major General Officer as the designated Information Resource Management Administrator (IRMA) for HQDA. However, during the early years of program implementation, we recommend the Director of the Army Staff be designated the IRMA, and that an O-6 be designated the IRM Program Manager to administer the IRM Program for the IRMA.

Further, we have recommended that grade levels O-6, O-5, O-4, GS-14 and GS-13 are appropriate for most staff positions. This trend is followed in the other offices, as well, because of the following factors: the responsible nature of the positions; the positions are technically demanding; and, the individuals will monitor the activities of others. Highly professional and well qualified individuals schooled in IRM concepts are essential to early program success.

We recommend that the office of IRM be staffed according to the schedule below:

- FY 1981

  O-6 (1) IRM Program Manager
  GS-14 (1) Analyst, HQDA IRM Support Unit

HQDA IRM Program Resource Requirements

Estimated Man Years of Effort Per Fiscal Year

AREAS OF IMPACT		FY 81	FY 82	FY 83	FY 84	FY 85	FY 86
Formalize IRM Management Community	OIRM	5	10	11	12	12	12
	ACSAC	7	10	12	13	13	13
	TAG	5	6	9	11	11	11
	IG/AAA	2	3	4	4	4	4
	Total	19	29	36	40	40	40
Implement IRM in Staff Agencies by Designating IRM Principals	Staff Agencies	16	24	32	36	40	40
Implement IRM in DPI's by Designating IRM Principals	HQDA DPI's	13	19	26	30	32	32
Total Man Years of Effort		48	72	94	106	112	112

HQDA Office of Information Resource Management

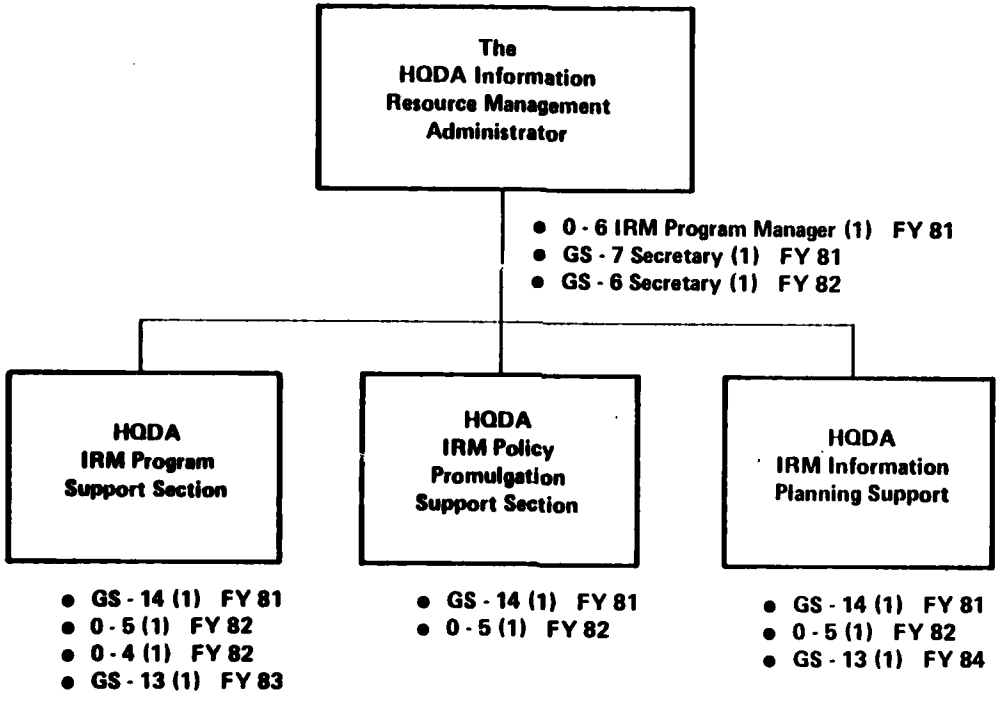


EXHIBIT XI-4

GS-14 (1) Analyst, HQDA IRM Program Policy Promulgation Unit
GS-14 (1) Analyst, HQDA IRM Information Planning Unit
GS-7 (1) Secretary

- FY 1982

0-5 (1) Analyst, Program Support Unit
0-4 (1) Analyst, Program Support Unit
0-5 (1) Analyst, Policy Promulgation Support Unit
0-5 (1) Analyst, Information Planning Support Unit
GS-6 (1) Secretary

- FY 1983

GS-13 (1) Analyst, Program Support Unit

- FY 1984

GS-13 (1) Analyst, Information Planning Support Unit

. OACSAC

In order to manage the IRM functional programs assigned to ACSAC, we recommend ACSAC begin staffing the OACSAC Office of IRM Program Support according to the following schedule. The organization chart is shown in Exhibit XI-5.

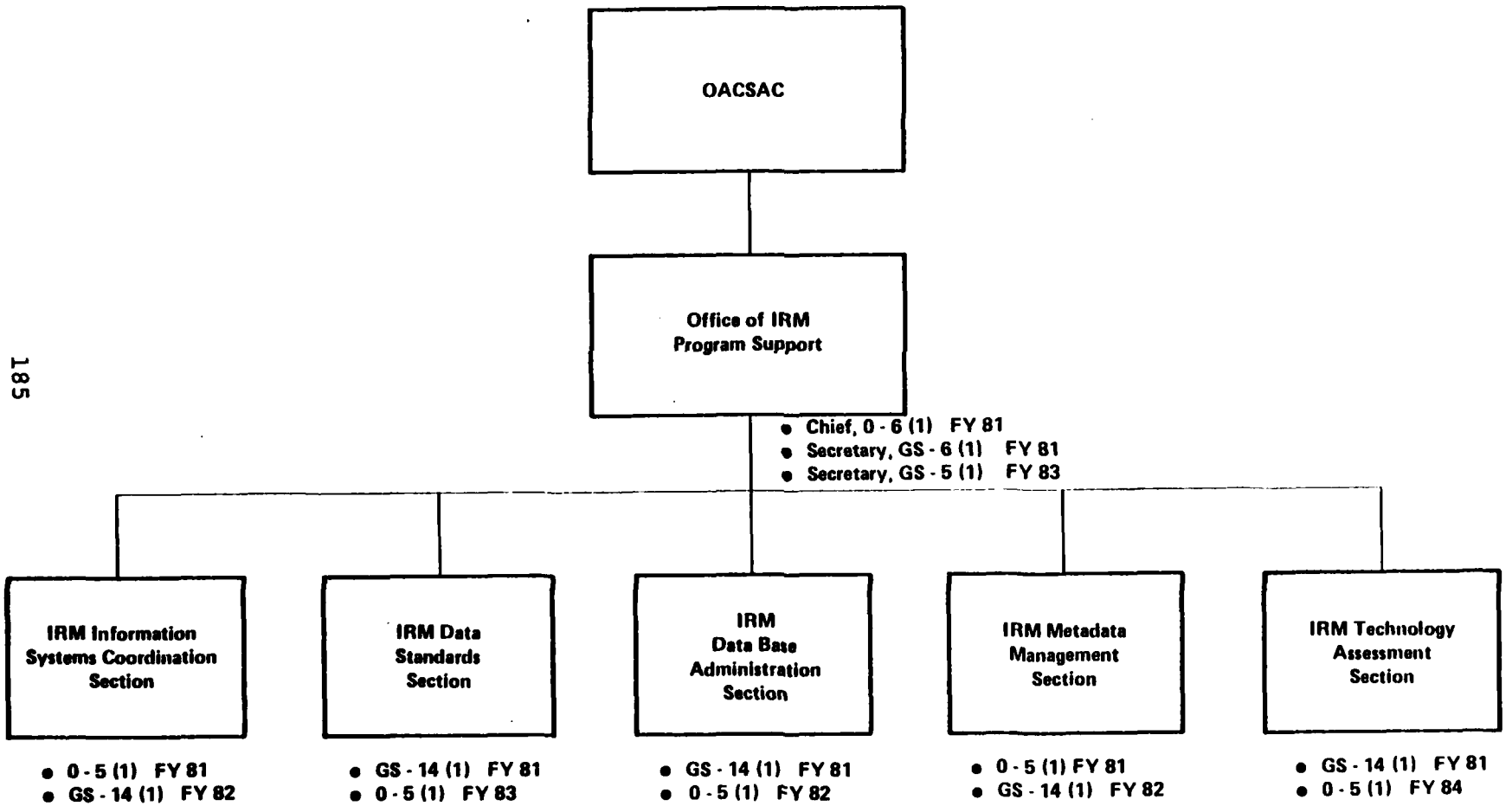
- FY 1981

0-6 Chief, Office of IRM Program Support
0-5 (1) Program manager, IRM Information Systems Coordination
GS-14 (1) Program Manager, IRM Data Standards
GS-14 (1) Program Manager, IRM Data Base Administration
0-5 (1) Program Manager, IRM Metadata Management
GS-14 (1) Program Manager, IRM Technology Assessment
GS-6 (1) Secretary

- FY 1982

GS-14 (1) Analyst, IRM Information Systems Coordination
0-5 (1) Analyst, IRM Data Base Administration
GS-14 (1) Analyst, IRM Metadata Management

OACSAC Office of IRM Program Support



- FY 1983

  0-5 (1) Analyst, IRM Data Standards
  GS-5 (1) Secretary

- FY 1984

  0-5 (1) Analyst, IRM Technology Assessment

These assignments may require some new personnel resources. Since OACSAC has current responsibility for Data Standards, Systems Review, and Data Base Administration, individuals currently assigned responsibilities in those IRM areas could be either redirected to staff the IRM functional programs, or they could be assigned the IRM functions as additional duties.

. TAG

In order to manage the IRM functional programs assigned to TAG we recommend TAG begin staffing the TAG Office of IRM Program Support according to the following schedule. The organization chart is shown in Exhibit XI-6.

- FY 1981

  0-6 (1) Chief, Office of IRM Program Support
  0-5 (1) Program Manager, IRM Reports Management
  GS-14 (1) Program Manager, IRM Records Management
  GS-14 (1) Program Manager, IRM Education
  GS-6 (1) Secretary

- FY 1982

  GS-14 (1) Program Manager, IRM Forms Management

- FY 1983

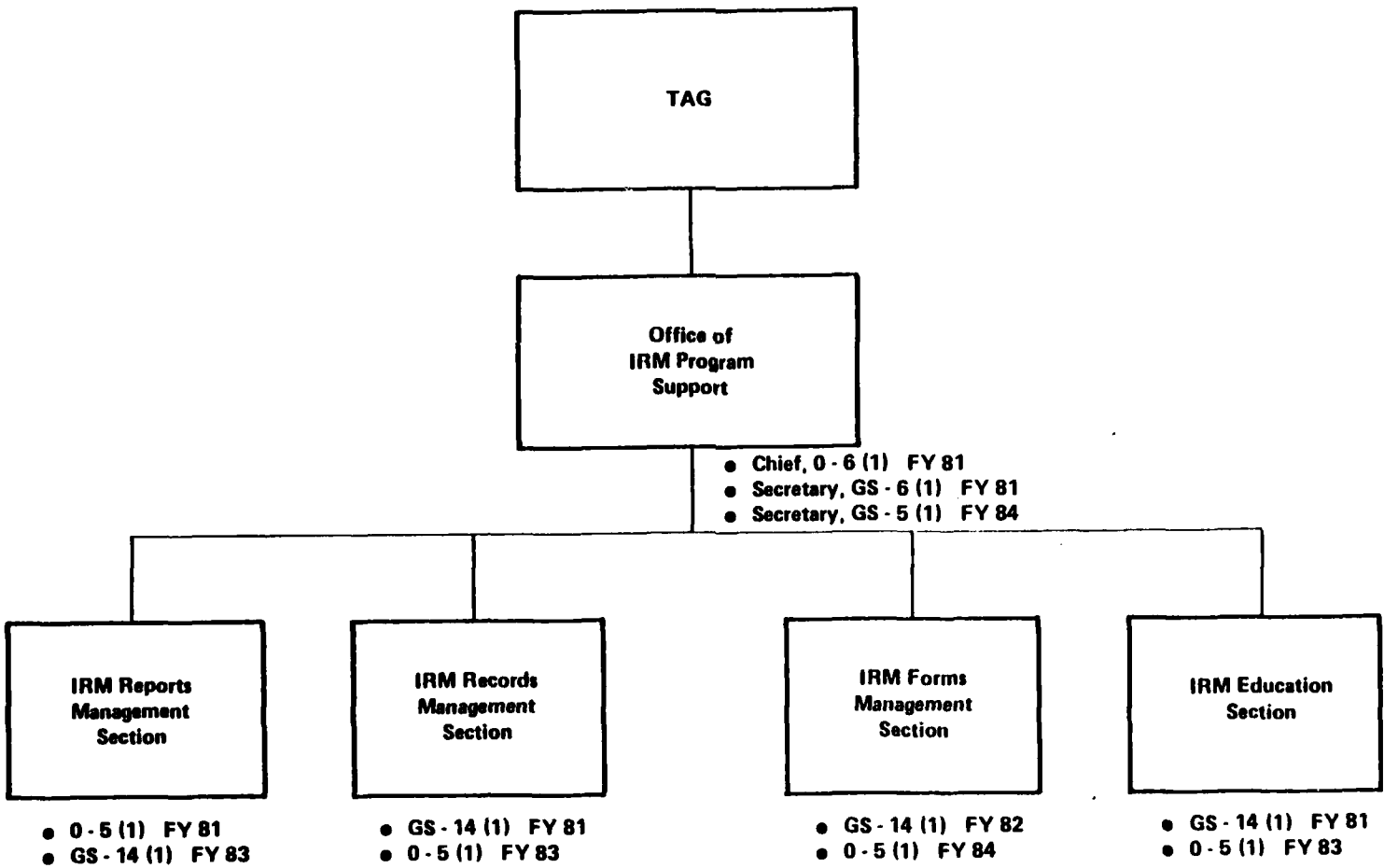
  GS-14 (1) Analyst, IRM Reports Management
  0-5 (1) Analyst, IRM Records Management
  0-5 (1) Analyst, IRM Education

- FY 1984

  0-5 (1) Analyst, IRM Forms Management
  GS-5 (1) Secretary

. IG/AAA

TAGO Office of IRM Program Support



The IRM Audit functional program should be staffed according to the following schedule. The organization chart is shown in Exhibit XI-7.

- Fy 1981

  0-6 (1) Program Manager, IRM Audit
  0-5 (1) IRM Auditor, IRM Audit Unit

- FY 1982

  0-4 (1) IRM Auditor, IRM Audit Unit

- FY 1983

  GS-5 (1) Secretary

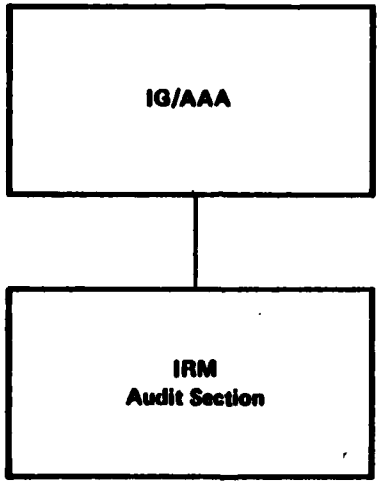
. HQDA Staff Agencies

Approximately sixteen man-years of effort will need to be allocated in FY 1981 (an average of one person full-time per Staff Agency) to perform the key functions of IRM Officer (coordinator for IRM) and Information Planning within each Staff Agency. Time should be split equally between the two functions. These individuals should be grade GS-13/14 or 0-4/5. Additional man years of effort will be needed in succeeding years as the program matures. The projected requirements are shown again in Exhibit XI-8 and reflect these gradual increases. The larger Staff Agencies will have greater personnel needs than those which are smaller and manage lesser amounts of information. As a result, the projections reflect requirements on an aggregate basis, rather than on an agency basis.

. HQDA DPIs

Exhibit XI-8 also summarizes the estimated resources required by the DPIs to implement the IRM program. During FY 1981, each DPI should formally designate one individual as the principle IRM Coordinator in the DPI on a full-time basis. With these appointments, the IR management community network of principals should be completed. These appointments may not require new resources in all instances, since many of the larger DPIs have begun to organize their resources to perform IRM related activities. Resource requirements estimated for successive years are presented and reflect an increasing need based upon gradual growth in the program.

IG Office of IRM Audit



- Chief, 0 - 6 (1) FY 81
- 0 - 5 (1) FY 81
- 0 - 4 (1) FY 82
- Secretary, GS - 5 (1) FY 83

EXHIBIT XI-7

HQDA IRM Program Resource Requirements

Estimated Man Years of Effort Per Fiscal Year

AREAS OF IMPACT		FY 81	FY 82	FY 83	FY 84	FY 85	FY 86
Formalize IRM Management Community	OIRM	5	10	11	12	12	12
	ACSAC	7	10	12	13	13	13
	TAG	5	6	9	11	11	11
	IG/AAA	2	3	4	4	4	4
	Total	19	29	36	40	40	40
Implement IRM in Staff Agencies by Designating IRM Principals	Staff Agencies	16	24	32	36	40	40
Implement IRM in DPI's by Designating IRM Principals	HQDA DPI's	13	19	26	30	32	32
Total Man Years of Effort		48	72	94	106	112	112

(b) Contractor Support Cost Estimates

Exhibit XI-9 summarizes the additional funding requirements which HQDA may wish to commit to the IRM program for the use of contractor support. The costs are described on a Fiscal Year basis below:

- FY 1980

  Contractor support could be used to conduct a HQDA IRM education campaign throughout the HQDA Staff Agencies and the DPIs. Training seminars could be developed to orient HQDA top management, middle managers, and operational managers of HQDA in the various aspects of IRM. Likewise, the education program could be tailored to satisfy the needs of the Handler, User, Supplier, and Manager communities as defined within the study. These training costs are estimated at $50,000.

  Contractor assistance to develop and publish final policies for the HQDA IRM program and to develop final directives and procedure manuals are estimated to cost approximately $50,000.

  Funds in the amount of $125,000 should be allocated for additional IRM impact studies.

- FY 1981

  Contractor support to conduct continued education courses may also be required during this year. The costs are estimated at $50,000.

  HQDA should make available approximately $250,000 to fund continued IRM study efforts in support of the IRM program. A portion of the funds could be allocated to one or more selected pilot projects where the IRM concepts could be implemented to demonstrate the benefits of IRM. Further, funds should be made available to develop and implement IRM support tools ($200,000) and to begin development and detailed design of the IRIS ($150,000). All DPIs have not, as yet, developed Data Element Dictionaries. Funds to support tool development should be allocated to assist those agencies which require additional support in installing these types of tools. Responsibility for developing the IRIS has been assigned to the ACSAC and funds should be made available to begin development of the IRIS, a major component being the HQDA Information Resource Directory.

HQDA IRM Program Resource Requirements

Estimated Support Costs ($ 000's)

ACTIVITY	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86
Assist HQDA in Detailed Policy & Procedure Documentation	50						
Assist HQDA in IRM Educational Campaign	50	50					
Develop and Implement Pilot Projects; Conduct Further Studies	125	250	500	250	250	250	100
Develop and Implement IRM Support Tools		200	500	750	500	500	200
Develop and Implement the Information Resource Information System (IRIS)		150	250	500	250	250	100
Total Estimated Support Costs	**225**	**650**	**1,250**	**1,500**	**1,000**	**1,000**	**400**

- FY 1982

  We recommend that development and implementation funds be budgeted in the following amounts:

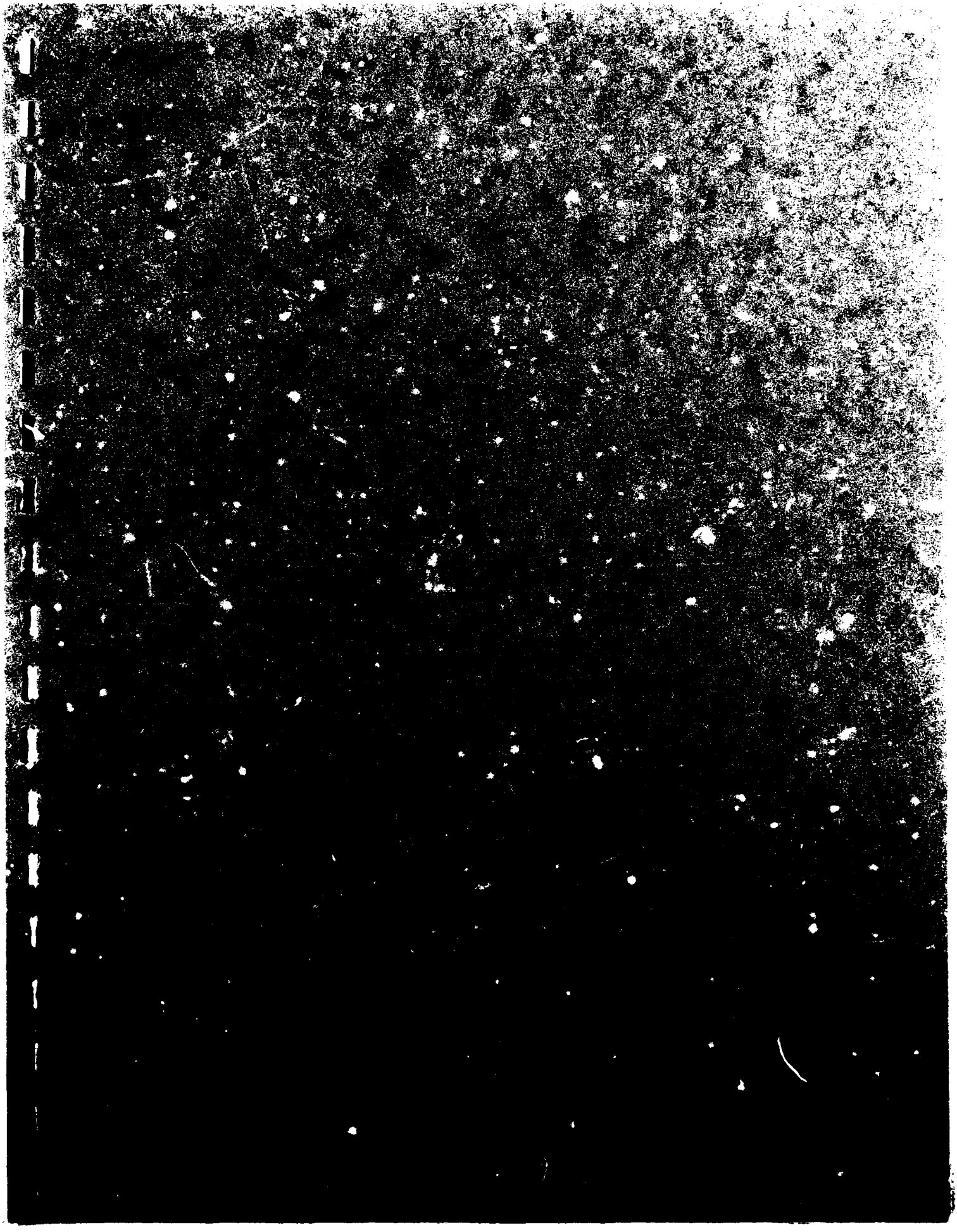
  - Pilot projects and additional studies ($500,000)
  - Development and Implementation of Tools ($500,000)
  - Continued Development of the IRIS ($250,000).

  These resources will be required during this year to fund the implementation of data dictionaries and the HQDA IRD. The larger portion of the funds will be required to collect and build the information resource inventories (data bases) of the individual DPIs, and for the HQDA IRD.

- FY 1983-1986

  During this four-year period, additional contractor funds should be made available in the amounts indicated to continue program implementation activities. The figures reflect a gradual decline in total development dollars, as most program support tools should be developed and operational by the fifth year of program implementation.

In estimating personnel resources to support the IRM program, we have held the requirements to the minimum we deem essential to implement the IRM program. We believe these resource requirements are a modest investment when compared to the substantial investment HQDA has already made in handling information. Many DPIs have begun to implement internal data management programs, each independent of the other. In order for HQDA to receive maximum benefit from these individual program efforts and independent resource commitments, we recommend these minimal resources be approved to support the IRM program implementation which should provide HQDA a capability of coordinating these independent efforts. In the final chapter, we present the recommendations and conclusions of our study.



XII. STUDY RECOMMENDATIONS

The overall goal of a HQDA Information Resource Management (IRM) Program is to establish the process whereby HQDA can begin to address in a unified fashion problems in the management and use of information. The objective of this report has been to provide HQDA an expanded definition of the IRM Program functions and to present HQDA with a plan of action which will enable it to implement such a program within the Headquarters. The recommendations presented in this chapter outline a general plan of action for moving forward in the development and implementation of the multi-step process.

1. SUMMARY OF RECOMMENDATIONS

In the preceeding chapters of this report we have:

- Provided detailed discussions of IRM functional activities and how they will impact HQDA
- Developed the organizational designs that are necessary to support administration of an IRM program
- Identified a program implementation schedule
- Estimated the resources the program will require.

These elements, when viewed collectively, provide HQDA a basis for making program decisions, committing resources, and beginning implementation of a program to manage automated information as an enterprise resource. Based on our review of these factors and our previous experience in related studies we recommend that HQDA proceed with the development of a formal program for information resource management. The study recommendations are shown in Exhibit XII-1 and discussed individually below.

2. STUDY RECOMMENDATIONS

As a result of having studied and analyzed HQDA's automated information environment Arthur Young & Company has developed the following recommendations for HQDA regarding the establishment of the process of information resource management.

RECOMMENDATION 1: **HQDA should establish as official HQDA policy that information is a valuable and costly resource which will be managed to increase its effectiveness and decrease its cost throughout HQDA.**

Information is vital to the functioning of HQDA and essential to the effective planning and control functions of the Army Staff. Without timely, accurate, and consistent information HQDA cannot make effective management decisions, appropriate resource allocations, or adequate

Study Recommendations

- HQDA SHOULD ESTABLISH AS OFFICIAL HQDA POLICY THAT INFORMATION IS A VALUABLE AND COSTLY RESOURCE WHICH WILL BE MANAGED TO INCREASE ITS EFFECTIVENESS AND DECREASE ITS COST THROUGHOUT HQDA
- HQDA SHOULD ESTABLISH A LONG-TERM PROGRAM FOR MANAGING ITS INFORMATION RESOURCE TO PROVIDE A FOCUS FOR ITS INFORMATION MANAGEMENT ACTIVITIES AND A UNIFIED HORIZONTAL VIEW OF INFORMATION ACROSS FUNCTIONAL BOUNDARIES
- HQDA SHOULD BEGIN, NOW, A COMPREHENSIVE EFFORT TO CREATE A HQDA-WIDE AWARENESS FOR IRM AND TO INFORM THE ARMY STAFF OF THE PHILOSOPHY OF, NEED FOR, IMPACT OF, AND BENEFITS TO BE DERIVED FROM THE HQDA IRM PROGRAM
- HQDA SHOULD ACT QUICKLY TO ESTABLISH AN IRM TASK FORCE TO PREPARE FOR THE IMPLEMENTATION OF THE IRM PROGRAM, TO COORDINATE THE GENERATION OF AN APPROPRIATE CSR FOR IRM, AND TO IDENTIFY NEEDED AND AVAILABLE RESOURCES FOR IRM IMPLEMENTATION
- HQDA SHOULD DESIGNATE THE DIRECTOR OF THE ARMY STAFF AS THE OFFICIAL HQDA INFORMATION RESOURCE ADMINISTRATOR. AN OFFICE OF INFORMATION RESOURCE MANAGEMENT (OIRM) SHOULD BE ESTABLISHED IN WHICH AN IRM PROGRAM MANAGER WOULD BE ASSIGNED RESPONSIBILITY TO COORDINATE AND MANAGE THE OVERALL HQDA IRM PROGRAM

Study Recommendations

- HQDA SHOULD ESTABLISH AN IRM STEERING COMMITTEE AS A NEW SUB-COMMITTEE OF THE SELCOM TO PROVIDE A FOCUS ON INFORMATION MANAGEMENT AND TO MONITOR AND DIRECT THE IRM PROGRAM
- HQDA SHOULD DISTRIBUTE THE RESPONSIBILITY FOR MANAGING THE INDIVIDUAL IRM FUNCTIONAL PROGRAMS AMONG THE OIRM, ACSAC, TAG, AND IG WITH EXPLICIT RESPONSIBILITIES FOR EXECUTING THE PROGRAMS ASSIGNED TO THE VARIOUS STAFF AGENCIES, DPIS, AND FIELD OPERATING AGENCIES
- HQDA SHOULD USE ITS AUTOMATED INFORMATION AS THE INITIAL FOCUS OF THE IRM PROGRAM, BUT HQDA SHOULD CONTINUE CONCURRENT CONSIDERATION OF THE FEASIBILITY AND DESIRABILITY OF EXTENDING THE SCOPE OF THE PROGRAM TO INCLUDE NON-AUTOMATED INFORMATION AND DA INFORMATION EXTERNAL TO HQDA AS WELL
- HQDA SHOULD FOLLOW AN EVOLUTIONARY APPROACH TO IMPLEMENTING IRM AND SHOULD PROCEED IN INCREMENTAL STEPS WHICH ALLOW FOR REASSESSMENT AND REDIRECTION OF THE PROGRAM AS IT MATURES
- HQDA SHOULD BEGIN SOON THE LONG-TERM PROCESS OF IMPLEMENTING TOOLS TO SUPPORT THE IRM PROGRAM AND THE USER, SUPPLIER, AND HANDLER COMMUNITIES THROUGH THE DEVELOPMENT OF AN INFORMATION RESOURCE INFORMATION SYSTEM (IRIS)

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rperational plans. Collecting, processing, transmitting, storing, and disseminating information is a costly process, but information is often viewed as a "free good" - there for the asking. Controlling the cost of information requires first that such costs be identified and then that the users and handlers of information be held accountable for the costs incurred as a result of their information related activities.

Arthur Young & Company recommends that HQDA formally recognize the cost and value of its information resource through the establishment of official policies to encourage the effective management of that resource. Such policies would constitute a pronouncement of top managment's concern in this area and their commitment to positive steps toward establishing the IRM process at HQDA.

RECOMMENDATION 2: HQDA should establish a long-term program for managing its information resource to provide a focus for its information management activities and a unified horizontal view of information across functional boundaries.

The process of managing information as a resource is a managerial philosophy or approach to dealing with information. It is not a short-term solution to a long-standing problem. It entails a new way of thinking about information which must be ingrained in the Army Staff and led by HQDA management. Current disjointed attempts to manage information from individual, relatively narrow perspectives must be coordinated to focus upon the management of information itself (as opposed to managing the medium, equipment, or system used to handle the information) and for the overall benefit of HQDA at large (as opposed to autonomous applications or independent uses). The respective individual focuses must be preserved, but they should be tempered by the net benefit to HQDA as a whole of information sharing and redundancy control.

We recommend that HQDA adopt the IRM approach to managing its information through the establishment of a formal program for IRM. Such a program would bring together current disparate information management programs into a unified direction while providing a management structure for insuring accountability for program success. We believe that the establishment of a HQDA IRM program will have a synergistic effect upon current efforts by insuring coordination and by providing new information management activities not currently in practice.

RECOMMENDATION 3: HQDA should begin, now, a comprehensive effort to create a HQDA-wide awareness for IRM and to inform the Army Staff of the philosophy of, need for, impact of, and benefits to be derived from the HQDA IRM program.

Because the concept of viewing information as an organizational resource is new to most people, there is a definite need to educate the members of the organization as to the implications of the IRM approach. Emphasis should be placed on the applicability of IRM within the individual Staff Agencies to manage their own information as well as the organizational benefits to be derived from information sharing and a coordinated approach. Such an educational process has already begun with the execution of this study, but more must be done to reach those who have not yet been exposed to the concept.

Arthur Young & Company recommends that HQDA begin now to conduct its own internal educational campaign designed to explain IRM and the pending IRM program. Such a campaign can be instituted in conjunction with the staffing of this study report, but its impact should go beyond the task of explaining the report. As the IRM program is established in HQDA the IRM Education Functional Program can be expected to pick up and build upon this initial educational campaign and work toward the training and building of information resource managers for the Army Staff.

RECOMMENDATION 4: HQDA should act quickly to establish an IRM Task Force to prepare for the implementation of the IRM program, to coordinate the generation of an appropriate CSR for IRM, and to identify needed and available resources for IRM implementation.

The implementation of a HQDA IRM program will require an evolutionary approach which is phased over a long period of time. In this study we have formulated the direction for HQDA to go but it remains for HQDA itself to lay the organizational groundwork, set priorities, and assemble resources to implement the program.

We recommend the establishment of an IRM Task Force to carry forward the work done by Arthur Young & Company and the Study Advisory Group. The staffing of this task force will require quality, experienced people who are knowledgeable in both the IRM concept and the operational structure of HQDA. Presumably these individuals would be detailed from their current organizations to serve on this task force during the transition period until the IRMA and the IRM Functional Program Managers are established.

RECOMMENDATION 5: HQDA should designate the Director of the Army Staff as the official HQDA Information Resource Management Administrator (IRMA). An Office of Information Resource Management (OIRM) should be established in which an IRM Program Manager would be delegated authority to coordinate and manage the overall HQDA IRM program.

To be a viable program, the IRM program will require an official Information Resource Management Administrator (IRMA) to direct its operation. The IRMA (through the IRM Program Manager) will be

responsible for arbitrating information disputes among the Staff Agencies, coordinating the activities of the individual IRM functional programs, and providing the focal point for information management activities across HQDA. The IRMA will review and defend the HQDA IRM budget, develop a consolidated HQDA information plan, and monitor overall progress toward HQDA IRM goals.

Arthur Young & Company recommends that HQDA establish the position of Information Resource Management Administrator within the Office of the Chief of Staff to provide adequate visibility and authority for this new and important position. The IRMA should be placed in an office reporting directly to the DAS to insure an information management focus unobscured by other duties and responsibilities or functional interests. It should be noted that this recommended placement is for the initial program with its limited scope of automated information at HQDA. Extension of the scope or expansion of the role of the IRMA will require further study and analysis and may result in the migration of the office to some other organizational position.

RECOMMENDATION 6: HQDA should establish an IRM Steering Committee as a new sub-committee of the SELCOM to provide a focus on information management and to monitor and direct the HQDA IRM Program.

The HQDA IRM Steering Committee will provide a forum for the Information Supplier, User and Handler Communities to provide feedback and direction to the Information Management Community. The Steering Committee will suggest new or revised IRM policy areas, propose areas for study and research, and provide a framework for surfacing and settling information disputes. In addition, it will provide a mechanism for identifying to the Supplier, User and Handler Communities the benefits being derived from the HQDA IRM Program.

Arthur Young & Company recommends the establishment of the IRM Steering Committee as a new sub-committee of the SELCOM to provide an unobscured focus on information management and to ensure adequate visibility and authority for its actions. As the parent committee, the SELCOM will be given an oversight responsibility to review the cost-effectiveness of the program, to ensure adequate allocation of resources, to review major issues not resolvable by the IRMA and the Steering Committee, and to assess the need to modify, restructure, or terminate the IRM Program.

RECOMMENDATION 7: HQDA should distribute the responsibility for managing the individual IRM Functional Programs among the OIRM, ACSAC, TAG, and IG with explicit responsibilities for executing the programs assigned to the various Staff Agencies, DPIs, and Field Operating Agencies.

We have identified eleven IRM Functional Programs which are needed to support the HQDA IRM Program. Five of these eleven are already present in the form of DA programs. The HQDA IRM program will build upon (not replace) these ongoing activities. HQDA Functional Program Managers will be required to develop functional program plans and budgets, to monitor and guide functional program implementation, and to establish and promulgate functional program policies. Under the distributed approach to information resource management all of the functional programs will not be centralized in a single agency under one managerial control.

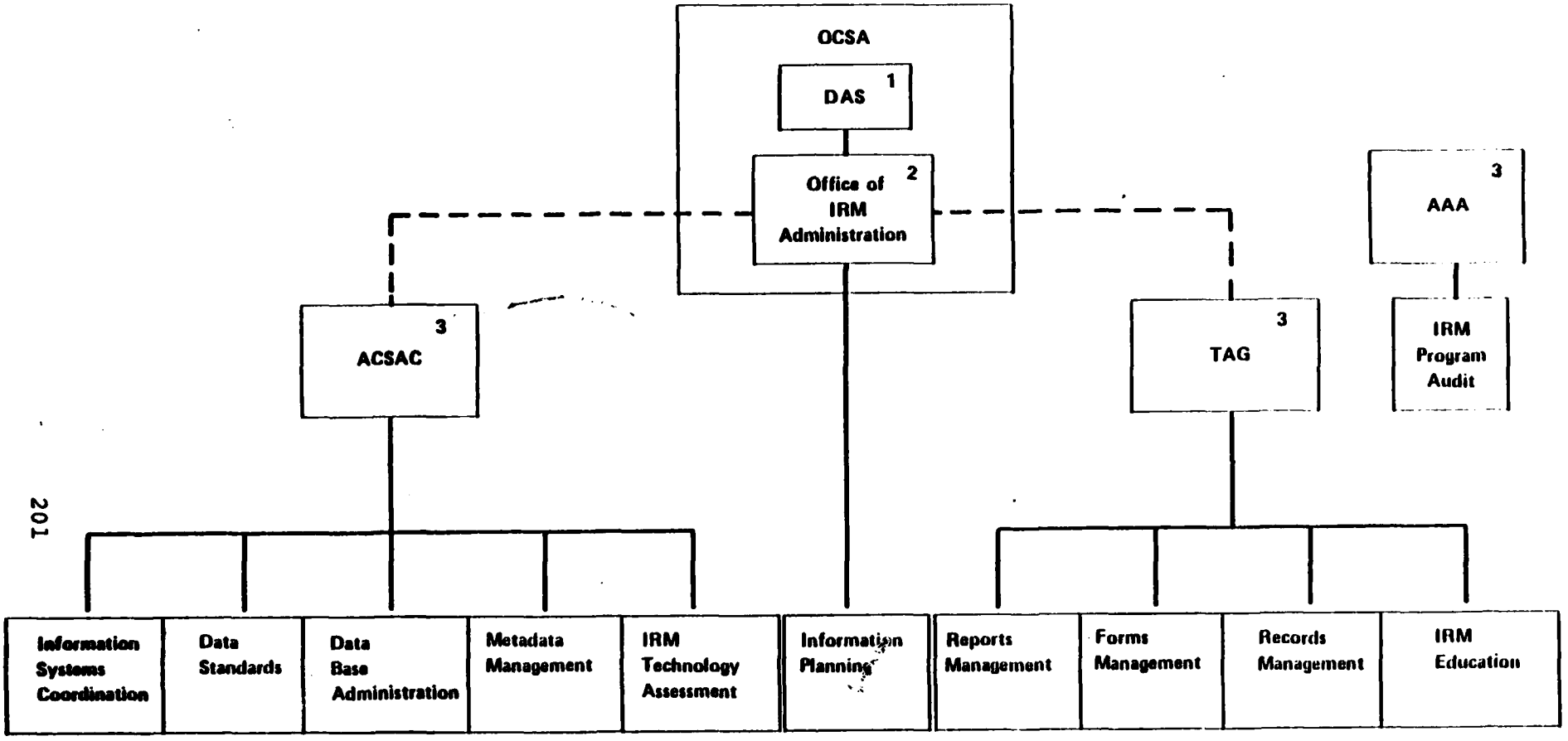
We recommend that the assignment of program management reponsibilities for the various IRM Functional Programs be as shown in Exhibit XII-2. We believe that this allocation of responsibilities is commensurate with current information management activities and provides proper focus for the new activities. It must be emphasized, however, that all of the Functional Programs will require close coordination, and the individual Functional Program Managers must cooperate with and support one another if the objectives of IRM are to be achieved. To work independently is to continue with the same ineffective approach to information management that HQDA is currently following.

RECOMMENDATION 8: HQDA should use its automated information as the initial focus of the IRM program, but HQDA should continue concurrent consideration of the feasibility and desirability of extending the scope of the program to include non-automated information and DA information external to HQDA as well.

Our study has been focused on automated information at HQDA and its supporting DPIs. Such a limitation was convenient to provide bounds to the study, thereby permitting the study to occur within reasonable resource constraints. As a result, our recommendations are focused on managing automated information as a resource of HQDA. This limited scope is sufficiently broad to permit an effective program which can provide substantial benefits to HQDA in the near term.

In the long term, there are additional benefits to be derived by HQDA from managing all of its information as a resource and even further gains to be made by the Army in applying the IRM philosophy to DA information flows and holdings. We have attempted to include in our design of the HQDA IRM program for automated information sufficient flexibility for future extensions of scope should HQDA deem that desirable. We recommend that HQDA pursue the exploration of the impact of possible extensions of scope concurrently with its proceeding to establish a HQDA IRM program for automated information. Failure to consider such extensions risks the loss of potentially substantial benefits since the majority of information employed by HQDA is obtained from DA sources and appears in a variety of non-automated forms (reports, memos, documents, forms, books, etc.). On the other hand, delay in initiating a HQDA IRM program pending a study of the

HQDA IRM Program Organization



1) The DAS Is Appointed the Official HQDA Information Resource Management Administrator.

2) The IRM Program Is Managed by an IRM Program Manager Located in the Office of IRM.

3) Selected Staff Agency Heads Are Designated Program Managers for Individual IRM Functional Programs.

EXHIBIT XII-2

feasibility of expanding the scope risks losing the current momentum for IRM already present among the Army Staff and risks encountering early resistance in some components of the Army to a HQDA-initiated IRM concept. The initial program of managing automated information as a HQDA resource could serve as a model and an organizational learning experience as the Army addresses the concept of information resource management.

RECOMMENDATION 9: HQDA should follow an evolutionary approach to implementing IRM and should proceed in incremental steps which allow for reassessment and redirection of the program as it matures.

Information resource management is a basic approach to organizing and managing any enterprise such as HQDA. As with other basic resource management approaches (e.g., personnel management or financial management) the introduction of such a fundamental philosophy cannot be accomplished immediately. A gradual process of personnel education, organizational learning, model development, prototype testing, and early demonstration of benefits will be required before a complete shift to IRM can take place.

We recommend that HQDA adopt an evolutionary approach to implementing IRM which focuses on incremental steps - large enough to be significant but small enough to control - so that the program can grow and adapt. Further, the program will be built upon the existing base of HQDA's current organizational structure and automated systems. Care must be taken to insure a cost-effective transition which permits the continued use of HQDA's vast investment in software and automated systems while focusing the direction of new developments along the information resource management approach. Finally, the development of the HQDA IRM program will be gradual to allow for redirection of the program as the environment changes. The program must be flexible to allow for change as HQDA matures in its understanding of what is needed to manage its information resource.

RECOMMENDATION 10: HQDA should begin soon the long-term process of implementing tools to support the IRM program and the Supplier, User, and Handler Communities through the development of an Information Resource Information System (IRIS).

A central aspect of managing any commodity as a resource is having available sufficient information about that commodity (information regarding its quantity, quality, location, availability, use, responsible individuals, etc.). Thus, for managing money there is financial information, and for managing people there is personnel information. With the information resource there is also the need for information about information (generally termed metadata - data about data). This metadata is not only useful to information resource managers in describing what it is they are managing, but it is also useful to the users and handlers of information in describing what it is they are handling or have available for their use.

Arthur Young & Company recommends that HQDA begin early in the process of instituting an IRM program the development of the necessary tools (metadata data bases, dictionaries, directories, forms inventories, records data bases, reports inventories, etc.) to support that program. It should be noted that these tools, while developed for specific IRM applications (Staff Agency dictionaries, for example), must not be developed independently of each other. The synergistic power that can come from these tools will arise from their compatibility with each other; hence, there is the need for a coordinated approach to tool development: the Information Resource Information System.

3. CONCLUSION

In the course of this study Arthur Young & Company has developed the concept of information resource management and devised a plan for implementing IRM at HQDA. We recognize the current requirement to restrict the size of the Army Staff and the concerns which HQDA will have about staffing a new IRM program. As a result, we have carefully designed the IRM program to build upon existing HQDA and DA efforts in the information management arena so that additional staff requirements can be kept to a minimum.

The magnitude of the potential impact of the HQDA IRM program necessitates a phased approach over a 5-year period. This phased approach allows for an early recognition of the need to manage information as a resource and a gradual commitment to the establishment of an IRM program in HQDA. The implementation plan thus contains a built-in mechanism for organizational learning as HQDA determines what is needed and what is feasible in managing its information resource.

Implementing the HQDA IRM program will require the allocation of resources to staff the Office of the IRM Administrator, to manage the individual IRM functional programs, and to administer the IRM program in the various Staff Agencies and DPIs. Several of the IRM functions are already being performed, in part, under established but uncoordinated DA programs. The HQDA IRM program can build upon these activities and the resources which have already been devoted to these areas. In other areas, however, no such pre-established program exists and new resources will be required. These resources may be recovered, in part, through reallocations made possible by the savings incurred as a result of the HQDA IRM program. These savings will necessarily be of a long-term nature, and thus, getting the program started may require an initial investment of resources.

In keeping with the recommended incremental evolutionary approach, an initial pilot IRM program can be established to serve as a prototype to test the feasibility of the IRM approach. Such a prototype will require sufficient resources, high visibility, and a broad perspective to serve as a valid test of information resource management. The recommended IRM Task Force can provide the impetus and direction for conducting such a pilot study. The CSA Data Base

and the PROBE system implementation effort are two possible candidate areas for an initial IRM test environment.

Information resource management is a relatively new discipline in the Federal government and private industry. As a result, there are many interpretations of what IRM means and what functions are to be encompassed by an IRM program. Nevertheless, the clear signals from Government and industry alike (through legislation, directives, products, systems, and the literature) are that viewing information as an organizational resource is the proper course of action and the coming trend. HQDA has taken the initiative to address the subject of information resource management and now has the opportunity to take advantage of this early work to start defining an IRM process best suited to its own needs and environment.

Information resource management is an idea whose time has come at HQDA. We have cited some of the problems with information at HQDA and discussed some of the benefits of information resource management. Earlier attempts to manage information at HQDA have been thwarted by the overpowering need to manage information media, equipment, and systems, with their visible and substantial costs. These efforts tended to focus on filling some important management void and then attempting to manage information from that singular perspective. Now, because such vital management processes are in place, HQDA can return its focus to the management of information across systems, equipment, media, or applications. HQDA now can begin the process of managing its information as a resource.

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